This document provides pertinent information concerning the reissuance of the VPDES Permit listed below. This permit is being processed as a major, municipal permit. The discharges result from the combined sewer system (CSS) during wet weather events at overflow points within the collection system; referred to as combined sewer overflows (CSOs). The requirements and special conditions contained within this permit are in accordance with 9VAC25-31-50.C. and the Clean Water Act, CSO Control Policy, Section 402(q)(1).

1.	Facility Name and Mailing Address:	Alexandria Combined Sewer System 301 King Street, Room 4100 Alexandria, VA 22313	SIC Code:	4952 WWTP
	Facility Location:	The combined sewer system serves a 540 acre area of the City of Alexandria. See **Attachment 1**.	City:	Alexandria
	Facility Contact Name:	Rashad Young / City Manager	Telephone Number:	703-746-4300
2.	Permit No.:	VA0087068	Expiration Date:	15 January 2012
	Other VPDES Permits:	Not Applicable		
	Other Permits:	VAR040057 – Phase II MS4 General Permit		
	E2/E3/E4 Status:	Not Applicable		
3.	Owner Name:	City of Alexandria		
	Owner Contact / Title:	Richard Baier / Director of Transportation and Environmental Services	Telephone Number:	703-746-4019
4.	Application Complete Date:	15 July 2011		
	Permit Drafted By:	Douglas Frasier	Date Drafted:	22 October 2012 16 November 2012 22 January 2013 13 February 2013 13 March 2013
	Draft Permit Reviewed By:	Alison Thompson	Date Reviewed:	26 November 2012
	WPM Review By:	Bryant Thomas	Date Reviewed:	11 November 2012 24 January 2013 27 February 2013 14 March 2013
	Public Comment Period:	Start Date: TBD 2013	End Date:	TBD 2013

5. Receiving Waters Information:

Receiving Stream Names:	Outfall 001: Oronoco Bay Outfall 002: Hunting Creek Outfall 003/004: Hooffs Run	Stream Codes:	Outfall 001: 1aPOT Outfall 002: 1aHUT Outfall 003/004: 1aHFF	
Drainage Areas:	Outfall 001: 224 acres Outfall 002: 184 acres Outfall 003/004: 132 acres	River Miles:	Outfall 001: 108.72 Outfall 002: 0.60 Outfall 003/004: 0.70 / 0.63	
Stream Basins:	Potomac River	Subbasins:	Potomac River	
Sections:	Outfall 001/002: 06 Outfall 003/004: 07	Stream Classes:	Outfall 001/002: II Outfall 003/004: III	
Special Standards:	Outfall 001/002: b,y Outfall 003/004: b	Waterbody IDs:	Outfall 001: VAN-A12E Outfall 002: VAN-A13E Outfall 003/004: VAN-A13R	

Outfall 001 / Outfall 002 / Outfall 003 / Outfall 004

7Q10 Low Flow:	Not Applicable*	7Q10 High Flow:	Not Applicable*
1Q10 Low Flow:	Not Applicable*	1Q10 High Flow:	Not Applicable*
30Q10 Low Flow:	Not Applicable*	30Q10 High Flow:	Not Applicable*
Harmonic Mean Flow:	Not Applicable*	30Q5 Flow:	Not Applicable*

*Overflows only occur during wet weather events. The flow within the receiving streams would be highly variable; dependent upon the previous precipitation event, amount/type of precipitation and longevity of the event. A mixing zone determination is not feasible.

6. Statutory or Regulatory Basis for Special Conditions and Effluent Limitations:

✓	State Water Control Law	✓	EPA Guidelines
✓	Clean Water Act	✓	Water Quality Standards
✓	VPDES Permit Regulation	✓	Other: CSO Control Policy
✓	EPA NPDES Regulation		CWA Section 402(q)(1)

7. Licensed Operator Requirements: Not Applicable

8. Reliability Class: Not Applicable

9. Permit Characterization:

	Private		Effluent Limited	✓	Possible Interstate Effect
	Federal	✓	Water Quality Limited		Compliance Schedule
	State		Whole Effluent Toxicity Program		Interim Limits in Permit
✓	POTW		Pretreatment Program		Interim Limits in Other Document
✓	TMDL				

10. Wastewater Sources and Treatment Description:

A combined sewer system (CSS) is a wastewater collection system that conveys wastewaters (domestic, commercial and industrial) and stormwater via a single pipe. Normally, the system transports all of the wastewater to a publicly owned treatment works (POTW) for treatment. However, these types of collection systems are designed to overflow at certain points in the system during rainfall or snowmelt events when the volume of water exceeds the capacity of the collection system and/or the treatment capacity of the POTW. A combined sewer overflow (CSO) refers to CSS discharges at these points in the collection system. The CSOs discharge a mixture of stormwater, untreated human and industrial waste, possible toxic materials and debris into a water body during wet weather events.

The City of Alexandria CSS serves approximately 540 acres with a population of 25,200. The majority of the sewershed is located in the Old Town area and consists of 6.2 miles of combined sewers with four (4) outfalls. During dry weather, all sanitary wastewaters are conveyed to the Alexandria Renew Enterprises WTP (VA0025160) for treatment. This treatment plant is owned and operated by the City of Alexandria, Virginia Service Authority.

Dry weather discharges from a CSS are strictly prohibited under the Combined Sewer Overflow Control Policy.

Outfall locations and brief descriptions:

Outfall 001: Pendleton Street Outfall
Location: east end of Pendleton Street
Minimum rainfall for overflow event: 0.06 inches

The wastewater flow originates from the North and South Trunks of the Pendleton Street Trunk Sewer, flowing into the Potomac Interceptor. The regulator structure is a diagonal weir, discharging through two flapper valve tide gates.

Outfall 002: Royal Street Outfall
Location: south end of Royal Street
Minimum rainfall for overflow event: 0.21 inches

This point in the CSS receives flow from the Royal Street Trunk Sewer, with all dry weather flow entering the Potomac Interceptor. The regulator is a 6 inch weir.

Outfall 003: King/West Streets Outfall
Location: under Duke Street at the crossing of Hooffs Run
Minimum rainfall for overflow event: 0.03 inches

This outfall and regulator are located in a box culvert that runs under Duke Street. Flows in this section of the CSS come from the Peyton Street Trunk Sewer and then to the Commonwealth Interceptor.

Outfall 004: Hooffs Run Outfall
Location: approximately 50 meters south of Duke Street
Minimum rainfall for overflow event: 0.16 inches

The regulator structure consists of an overflow weir upstream of inverted siphons; outfall structure is a flapper valve.

See **Attachment 2** for a map illustrating the locations of the outfalls.

The national framework for control of CSOs is found in the Environmental Protection Agency's (EPA) *Combined Sewer Overflow (CSO) Control Policy*, published on 19 April 1994 and later incorporated into the Wet Weather Water Quality Act of 2000. This policy established a comprehensive and consistent approach for controlling discharges from CSOs.

The goals of the Policy are to:

- Ensure that if CSOs occur, they are only as a result of wet weather;
- Bring all wet weather CSO discharge points into compliance with the technology-based and water quality-based requirements of the Clean Water Act; and
- Minimize the impacts of CSOs on water quality, aquatic biota and human health.

The policy requires communities with CSOs to prepare a Long Term Control Plan (LTCP) detailing how they will accomplish these goals. The overall approach regarding the LTCP consists of three steps: system characterization, development and evaluation of alternatives and selection/implementation of the controls. In February 1999, the City of Alexandria's LTCP, consisting of the nine minimum controls (Section 17.e.), was approved by DEQ. The City of Alexandria elected to demonstrate that the controls in place would meet the Water Quality Standards by means of modeling. These tools were used to ascertain the frequency, duration and volume of CSO discharges. In addition, these models were used to predict the possible impacts on the receiving streams.

The 2006 305(b)/303(d) Water Quality Assessment Report stated that Hunting Creek did not support the Recreation Use and the Fish Consumption Use due to bacteria and polychlorinated biphenyls (PCBs), respectively. Outfall 002 discharges directly into Hunting Creek while Outfall 003 and Outfall 004 discharge to a tributary to Hunting Creek. Total Maximum Daily Loads (TMDLs) have been developed and approved for both impairments. This system has been identified as a source within each document. Please refer to Section 15 of this Fact Sheet for further details.

Point source components for TMDLs are implemented through the VPDES permitting programs while nonpoint source controls are implemented via a combination of best management practices (BMPs), state and/or local regulations.

TABLE 1 OUTFALL DESCRIPTION					
Number	Number of CSO Events*	Average Duration of Overflow*	Average Volume of Overflow*	Estimated Annual Volume of Overflow**	Latitude / Longitude
001	28	2.32 hours	1.36 million gallons	35.21 million gallons	38° 48' 35'' / 77° 02' 19''
002	25	1.92 hours	1.41 million gallons	31.27 million gallons	38° 47' 30'' / 77° 02' 49''
003	58	6.05 hours	0.66 million gallons	36.67 million gallons	38° 48' 15'' / 77° 03' 33''
004	28	8.04 hours	0.27 million gallons	9.63 million gallons	38° 48' 13'' / 77° 03' 34''
*Approximations; per permit application, dated 8 July 2011, for the time period of June 2010 – May 2011.					
**2011 Annual Report Model Summary					
See **Attachment 3** for the Alexandria topographic map.					

11. Sludge Treatment and Disposal Methods: Not Applicable. There is no sludge generated within this system.

12. Discharges and Monitoring Stations Located within Waterbodies VAN-A12E, VAN-A13E and VAN-A13R:

TABLE 2 DISCHARGES & MONITORING STATIONS			
ID / Permit Number	Facility Name	Type	Receiving Stream
VAN-A12E			
VAR051790	USPS – Maintenance Yard	Stormwater General Permits	Four Mile Run, UT
VAR051097	WMATA Four Mile Run Bus Garage		Four Mile Run
VAR051001	Robinson Terminal Warehouse		Potomac River
VAR051421	Arlington County Water Pollution Control Facility		Four Mile Run
VAR050997	Red Top Cab		Potomac River
VA0032000	US Department of Defense – Pentagon	Minor Industrial Discharge	Roaches Run
VA0025143	Arlington County Water Pollution Control Facility	Major Municipal Discharge	Four Mile Run
VAN-A13E			
1aHUT000.01	DEQ ambient monitoring station		
VA0025160	Alexandria Renew Enterprise WTP	Major Municipal Discharge	Hunting Creek
VAG110086	Virginia Concrete Company, Inc. – Alexandria	Ready-Mix Concrete General Permit	Hooffs Run
VAG756000	Falls Church Liberty	Carwash General Permit	Tripps Run
VAN-A13R			
VA0090107	Carlyle Development II	Minor Industrial Discharge	Old Cameron Run
VAG110009	Virginia Concrete Company, Inc. – Springfield	Ready-Mix Concrete General Permit	Backlick Run, UT Indian Run, UT

TABLE 2 (continued)			
VAN-A13R			
VAG830281	Fannon Petroleum Service	Petroleum General Permits	Hooffs Run
VAG830406	Shell 24501141808 – Skyhill		Cameron Run, UT
VAG830090	Aalans Service, Inc.		Tripps Run
VAG250107	GBA Associates – Annex Building	Cooling Water General Permits	Holmes Run
VAG250091	GBA Associates Limited Partnership		
VAG750124	Enterprise Rent A Car – Alexandria	Carwash General Permit	Holmes Run, UT

13. Material Storage: Not Applicable. There are no chemicals utilized or stored at this facility.

14. Site Inspection: Performed by DEQ-NRO Compliance Staff on 22 February 2012 (see **Attachment 4**).

Subsequent inspection conducted at Alexandria Renew Enterprises WTP and the City of Alexandria CSS by EPA Region III Enforcement Branch on 26 and 27 June 2012 (DEQ Compliance and Permitting Staff were present).

15. Receiving Stream Water Quality and Water Quality Standards:

a. Ambient Water Quality Data

Outfall 001:

This waterbody flows into the Potomac River, which, at this specific location, is under the jurisdiction of the District of Columbia. There is no DEQ monitoring data available for this receiving stream; however, the City was required to conduct ambient monitoring of Oronoco Bay during the last permit term. See **Attachment 5** for the monitoring locations and **Attachment 6** for the monitoring data.

A bacteria TMDL for this portion of the Potomac River was completed in July 2004 by the District Department of the Environment. No specific wasteload allocation was assigned to the City of Alexandria Combined Sewer System under this TMDL. Virginia was assigned a wasteload allocation as a whole, to be apportioned amongst all contributors.

Outfall 002:

The closest DEQ monitoring station with ambient data is Station 1aHUT000.01, located in the tidal waters of Hunting Creek at the George Washington Memorial Parkway bridge crossing. The station is located approximately 0.28 rivermiles from Outfall 002.

The City has conducted extensive ambient monitoring of Hunting Creek during the last two permit terms. See **Attachment 7** for the monitoring location and **Attachment 8** for data collected during the last permit term.

E. coli monitoring finds a bacterial impairment, resulting in an impaired classification for the recreation use. A bacteria TMDL for Hunting Creek has been completed and was approved by EPA on 10 November 2010. Outfall 002 was assigned a wasteload allocation of 6.26E+13 cfu/year for *E. coli* bacteria; representing an 80% reduction of current bacteria loadings fromthis outfall.

The submerged aquatic vegetation data is assessed as fully supporting the aquatic life use. For the open water aquatic life sub-use; the thirty day mean is acceptable. However, the seven day mean and instantaneous levels have not been assessed.

The wildlife use is considered fully supporting.

Outfalls 003/004:

There are no DEQ monitoring stations located on Hooffs Run. The closest downstream DEQ monitoring station with ambient data is Station 1aHUT000.01, located in the tidal waters of Hunting Creek at the George Washington Memorial Parkway bridge crossing. The station is located approximately 1.29 and 1.22 rivermiles downstream from Outfall 003 and Outfall 004, respectively.

E. coli monitoring finds a bacterial impairment, resulting in an impaired classification for the recreation use. A bacteria TMDL for Hunting Creek has been completed and was approved by EPA on 10 November 2010. Wasteload allocations of 6.26E+13 and 8.52E+11 cfu/year for *E. coli* bacteria were assigned to Outfall 003 and Outfall 004, respectively. This represents a 99% reduction of current bacteria loadings at each outfall.

The submerged aquatic vegetation data is assessed as fully supporting the aquatic life use. For the open water aquatic life sub-use; the thirty day mean is acceptable. However, the seven day mean and instantaneous levels have not been assessed.

The wildlife use is considered fully supporting.

All Outfalls:

The fish consumption use is categorized as impaired due to a Virginia Department of Health, Division of Health Hazards Control, PCB fish consumption advisory and PCB fish tissue monitoring. A PCB TMDL for the tidal Potomac River watershed has been completed and was approved by EPA on 31 October 2007. The City of Alexandria CSS was identified as a source of PCBs in the TMDL but no reductions in loadings are required in the TMDL.

There is a downstream impairment noted for aquatic life use for the Chesapeake Bay. There is a completed TMDL and all sources were included. The CSS was included in the watershed implementation plan (WIP) submitted to EPA on 29 November 2011. Essentially, wasteload allocations assigned to this CSS equates to the current Long Term Control Plan consisting of the Nine Minimum Controls.

See **Attachment 9** for the full planning statement.

b. Receiving Stream Water Quality Criteria

Part IX of 9VAC25-260-(360-550) designates classes and special standards applicable to defined Virginia river basins and sections. Table 3 provides the receiving stream, section number, river basin and stream classification for each respective outfall.

TABLE 3

Outfall	Receiving Stream	Section Number	River Basin	Stream Classification
001	Oronoco Bay	06	Potomac	II
002	Hunting Creek	06	Potomac	II
003/004	Hooffs Run	07	Potomac	III

Class II tidal waters in the Chesapeake Bay and it tidal tributaries must meet dissolved oxygen concentrations as specified in 9VAC25-260-185 and maintain a pH of 6.0 – 9.0 standard units as specified in 9VAC25-260-50. In the Northern Virginia area, Class II waters must meet the Migratory Fish Spawning and Nursery Designated Use from February 1 through May 31. For the remainder of the year, these tidal waters must meet the Open Water use. The applicable dissolved oxygen criteria concentrations are presented **Attachment 10**.

At all times, Class III waters must achieve a dissolved oxygen (D.O.) of 4.0 mg/L or greater, a daily average D.O. of 5.0 mg/L or greater, a temperature that does not exceed 32° C and maintain a pH of 6.0 – 9.0 standard units (S.U.).

c. Receiving Stream Special Standards

The State Water Control Board's Water Quality Standards, River Basin Section Tables (9VAC25-260-360, 370 and 380) designates the river basins, sections, classes and special standards for surface waters of the Commonwealth of Virginia. The receiving streams at Outfall 001 and Outfall 002, Oronoco Bay and Hunting Creek, respectively, are located within Section 06 of the Potomac River Basin. This section has been designated with special standards of "b" and "y".

The receiving stream at Outfall 003 and Outfall 004, Hooffs Run, is located within Section 07 of the Potomac River Basin. This section has been designated with a special standard of "b".

Special Standard "b" (Potomac Embayment Standards) established effluent standards for all sewage plants discharging into Potomac River embayments and for expansions of existing plants discharging into non-tidal tributaries of these embayments. 9VAC25-415, Policy for the Potomac Embayments controls point source discharges of conventional pollutants into the Virginia embayment waters of the Potomac River, and their tributaries, from the fall line at Chain Bridge in Arlington County to the Route 301 bridge in King George County. The regulation sets effluent limits for BOD_5, total suspended solids, phosphorus and ammonia to protect the water quality of these high profile waterbodies.

The Potomac Embayment Standards are not applicable to these discharges since combined sewer overflows were explicitly exempted (9VAC25-415-30).

Special Standard "y" is the chronic ammonia criterion for tidal freshwater Potomac River and tributaries that enter the tidal freshwater Potomac River from Cockpit Point (below Occoquan Bay) to the fall line at Chain Bridge. During November 1 through February 14 of each year the thirty-day average concentration of total ammonia nitrogen (in mg/L) shall not exceed, more than once every three years on the average the following chronic ammonia criterion:

$$\left(\frac{0.0577}{1 + 10^{7.688-pH}} + \frac{2.487}{1 + 10^{pH-7.688}} \right) \times 1.45\left(10^{0.028(25-MAX)}\right)$$

MAX = temperature in °C or 7, whichever is greater.

The default design flow for calculating steady state waste load allocations for this chronic ammonia criterion is the 30Q10, unless statistically valid methods are employed which demonstrate compliance with the duration and return frequency of this water quality criterion.

The Special Standard "y" is not applicable to these discharges since combined sewer overflows are intermittent by design; only the acute criterion would apply.

d. Threatened or Endangered Species

The Virginia DGIF Fish and Wildlife Information System Database was searched on 25 August 2011 for records to determine if there are threatened or endangered species in the vicinity of the discharge. The following threatened and endangered species were identified within a 2 mile radius of the outfalls: Brook Floater (mussel); Grizzled Skipper (butterfly); Bald Eagle; and Migrant Loggerhead Shrike (song bird). The monitoring and special conditions proposed in this draft permit protect the threatened and endangered species found near the discharge.

The stream that the facility discharges to is within a reach identified as having an Anadromous Fish Use. It is staff's best professional judgment that the proposed monitoring and special conditions will ensure protection of this use.

16. Antidegradation (9VAC25-260-30):

All state surface waters are provided one of three levels of antidegradation protection. For Tier 1 or existing use protection, existing uses of the water body and the water quality to protect these uses must be maintained. Tier 2 water bodies have water quality that is better than the water quality standards. Significant lowering of the water quality of Tier 2 waters is not allowed without an evaluation of the economic and social impacts. Tier 3 water bodies are exceptional waters and are so designated by regulatory amendment. The antidegradation policy prohibits new or expanded discharges into exceptional waters.

This reissuance involves four (4) outfalls discharging into three (3) different receiving streams. The receiving streams have been classified as Tier 1 based on the fact that all are listed as impaired and given the highly developed urban watersheds. The proposed permit monitoring requirements and special conditions have been developed per the CSO Control Policy which will result in attaining and/or maintaining all water quality criteria which apply to the receiving streams, including narrative criteria.

17. Effluent Screening, Wasteload Allocations and Effluent Monitoring Development:

To determine water quality-based effluent limitations for a discharge, the suitability of data must first be determined. Data is suitable for analysis if one or more representative data points are equal to or above the quantification level ("QL") and the data represent the exact pollutant being evaluated.

a. Effluent Screening

Monitoring data obtained during the last permit term at each outfall has been reviewed and determined to be suitable for evaluation.

Please see **Attachment 11** for a summary of the monitoring data for all outfalls.

The following pollutants require a wasteload allocation analysis: ammonia, copper and zinc.

b. Wasteload Allocations (WLAs)

Discharge events from the City Of Alexandria CSS only occur during wet weather events. The stormwater subsequently increases the volume of water conveyed beyond the POTW's design capacity and the storage capability of the conveyance system. Since the duration of the discharge is not likely to exceed four days during a discharge event, only the acute criteria need to be discussed.

Water Quality Criteria (WQC) for human health and chronic toxicity are based upon long term, continuous exposure and are believed not applicable to this type of intermittent discharge.

Further, it is staff's best professional judgement to establish acute wasteload allocations by multiplying the acute water quality criteria by a factor of 2 unless site specific dilution data is available. The two times factor is derived from acute criteria being defined as one half of the final acute value (FAV) for a specific toxic pollutant. The FAV is determined from exposure of a specific toxicant to a variety of aquatic species and is based on the level of a chemical or mixture of chemicals that does not allow the mortality or other specified response of aquatic organisms. These criteria represent maximum pollutant concentration values, which when exceeded, would cause acute effects on aquatic life in a short time period.

Please see **Attachment 12** for the derived WLA for each outfall. It should be noted that the actual stream and discharge flows do not equate to 1 MGD as presented in the computations. These values are utilized to calculate the wasteload allocations while simulating tidal conditions; thus, obtaining the aforementioned two times factor.

Since Hooffs Run is an urban stream, draining a highly developed area and there is no available ambient data, it was staff's best professional judgement to utilize pH and temperature data from Hunting Creek monitoring results in order to calculate the WLAs for Outfall 003 and Outfall 004. The basis for this rationale is that Hunting Creek is ultimately the receiving stream for these two outfalls and the distance between the stream and the outfalls is less than one (1) mile.

c. Toxic Pollutants

1). Ammonia as N:

Staff evaluated the outfall monitoring data obtained during the last permit term and compared those results with the calculated acute wasteload allocations (WLAs). Staff found that all data points were below the acute WLAs for ammonia. It is staff's best professional judgement that these discharges do not pose a reasonable potential to cause or contribute to a violation of the ammonia criteria at this time. However, the permittee shall continue analyzing ammonia levels at each outfall during this permit term in order to monitor any potential increase in this pollutant and potential impacts on the receiving streams.

See **Attachment 11** for outfall monitoring results that were detected above the laboratory quantification level (QL) and **Attachment 12** for the subsequent WLA calculations.

2). Total Residual Chlorine:

Currently, there is no disinfection at any of the four (4) outfalls; therefore, a reasonable potential assessment for chlorine is not warranted.

3). Metals/Organics:

Monitoring data for all outfalls necessitated a reasonable potential analysis for copper and zinc since the sampling results were found above the quantification levels.

Data from Outfall 001, Outfall 003 and Outfall 004 indicates that neither metal is currently a pollutant of concern at these discharge points. All data points were below the acute WLA for both metals.

Outfall 002 data indicates that the copper values ascertained during monitoring may be a pollutant of concern; conversely, zinc is not a pollutant of concern at this outfall. Subsequent analysis will be completed by DEQ staff after submission of monitoring data.

See **Attachment 13** for the metal analyses for each outfall.

d. Effluent Monitoring Summary

Effluent monitoring requirements are presented in the following table. Monitoring requirements were established for pH, carbonaceous-biochemical oxygen demand ($cBOD_5$), total suspended solids (TSS), dissolved oxygen (DO), total kjeldahl nitrogen (TKN), ammonia as N, *E. coli*, nitrate+nitrite, total nitrogen (TN), total phosphorus (TP), chlorides, total recoverable zinc, total recoverable copper, rainfall amount, rainfall duration and duration of discharges.

e. Nine Minimum Controls (NMCs)

This permit requires continued implementation of the nine minimum controls (NMCs) as set forth in the CSO Control Policy:

1). Conduct Proper Operations and Regular Maintenance Programs.

The permittee shall continue to implement the operation and maintenance plan for the combined sewer system (CSS) that includes the elements listed below. The permittee shall update the plan to incorporate any changes to the system and shall operate and maintain the system accordingly.

(a) Designation of a Manager for the CSS.

The permittee shall designate a person to be responsible for the wastewater collection system.

(b) Inspection and Maintenance of CSS.

The permittee shall inspect and maintain all CSO structures, regulators and tide gates to ensure proper working condition, adjusted to minimize CSOs and tidal inflow. The permittee shall inspect each CSO outfall at an appropriate frequency to ensure no dry weather overflows are occurring. The inspection shall include, but is not limited to, entering the regulator structure if accessible, determining the extent of debris and grit buildup and removing any debris that may constrict flow, cause blockage or result in a dry weather overflow. The permittee shall record in a maintenance log book the results of the inspections. For CSO outfalls that are inaccessible, the permittee may perform a visual check of the overflow pipe to determine whether or not the CSO is occurring during dry weather flow conditions.

(c) Provision for Trained Staff.

The permittee shall continue to ensure the availability of trained staff to complete the operation, maintenance, repair and testing functions required to comply with the terms and conditions of this permit.

(d) Allocation of Funds for O&M.

The permittee shall allocate adequate funds specifically for operation and maintenance (O&M) activities. The permittee shall ensure the necessary funds, equipment and personnel have been committed to carry out the O&M plan for the next fiscal year.

2). Maximize Use of the Collection System for Storage.

The permittee shall maximize the in-line storage capacity of the CSS. The permittee shall maintain all dams or diversion structures; minimize discharges from the CSS outfalls; and maintain maintenance records.

3). Control of Non-Domestic Discharges.

The permittee shall continue to implement selected CSO controls to minimize the impact of non-domestic discharges.

4). Maximize Flow to the Publicly Owned Treatment Works (POTW).

The permittee shall convey, to the greatest extent practicable, all wet weather flows to the POTW within the constraints of the CSS and the capacity of the POTW. The POTW is owned, operated and maintained by the City of Alexandria, Virginia Service Authority and is regulated under a separate VPDES permit (VA0025160). The permittee shall maintain records to document these actions.

5). Prohibit Combined Sewer Overflows during Dry Weather.

Dry weather overflows from CSS outfalls are prohibited. Dry weather flow conditions shall mean the flow in a combined sewer that results from sanitary sewage, industrial wastewater and infiltration/inflow; with no contribution from stormwater runoff or stormwater induced infiltration.

All dry weather overflows must be reported to DEQ-NRO and the local health department within 24 hours of acknowledgement. The permittee shall begin corrective action immediately, monitor the dry weather overflow until the overflow has been eliminated and shall record, in the inspection log book, an estimate of the beginning and ending times of the discharge, discharge volume and corrective measures taken.

6). Control Solid and Floatable Materials.

The permittee shall implement measures to control solid and floatable materials in the CSS. Such measures shall include, but not limited to, regular catch basin and street cleaning within the CSS sewershed, cleaning of trunk lines and structures and consideration of entrapment and baffling devices.

7). Develop and Implement Pollution Prevention Program.

The permittee shall continue to implement the pollution prevention (P2) program to reduce the impact of CSOs on receiving waters. The permittee shall maintain records to document the pollution prevention implementation activities. Specific P2 measures include street sweeping and catch basin cleaning, household hazard waste recycling program and a waste oil and antifreeze recycling/referral service program.

8). Public Notification.

The permittee shall continue to implement a public notification plan to inform citizens of when and where CSOs occur. The permittee shall ensure that identification signs at all CSS outfalls are maintained and easily readable by the public.

9). CSO Monitoring.

The permittee shall regularly monitor CSO outfalls to effectively characterize CSO impacts and the efficacy of CSO controls.

18. Antibacksliding:

All limits in this permit are at least as stringent as those previously established. Backsliding does not apply to this reissuance.

19. Effluent Monitoring Requirements:

CSS Outfalls 001/002/003/004
Effective Dates: During the period beginning with the permit's effective date and lasting until the expiration date.

PARAMETER	BASIS FOR LIMITS	DISCHARGE LIMITATIONS				MONITORING REQUIREMENTS	
		Monthly Average	Weekly Average	Minimum	Maximum	Frequency	Sample Type
Flow (MGD)	NA	NA	NA	NA	NL	1/Q	Estimate
pH	3	NA	NA	NL S.U.	NL S.U.	1/Q	Grab
$cBOD_5$	2	NA	NA	NA	NL mg/L	1/Q	Grab
Total Suspended Solids (TSS)	2	NA	NA	NA	NL mg/L	1/Q	Grab
Dissolved Oxygen (DO)	2	NA	NA	NL mg/L	NA	1/Q	Grab
Total Kjeldahl Nitrogen (TKN)	2	NA	NA	NA	NL mg/L	1/Q	Grab
Ammonia, as N	2	NA	NA	NA	NL mg/L	1/Q	Grab
*E. coli**	2	NA	NA	NA	NL n/100 mL	1/Q	Grab
Oil & Grease	2	NA	NA	NA	NL mg/L	1/Q	Grab
Nitrate+Nitrite, as N	2	NA	NA	NA	NL mg/L	1/Q	Grab
Total Nitrogen**	2	NA	NA	NA	NL mg/L	1/Q	Calculated
Total Phosphorus	2	NA	NA	NA	NL mg/L	1/Q	Grab
Chlorides	2	NA	NA	NA	NL mg/L	1/Q	Grab
Zinc, Total Recoverable	2	NA	NA	NA	NL µg/L	1/Q	Grab
Copper, Total Recoverable	2	NA	NA	NA	NL µg/L	1/Q	Grab
Rainfall	2	NA	NL inches	NA	NA	1/Q	Measured
Rainfall Duration	2	NA	NL hours	NA	NA	1/Q	Recorded
Duration of Discharge	2	NA	NL hours	NA	NA	1/Q	Estimate

The basis for the limitations codes are:

1. Federal Effluent Requirements
2. Best Professional Judgement
3. Water Quality Standards

MGD = Million gallons per day.
NA = Not applicable.
NL = No limit; monitor and report.
S.U. = Standard units.
1/Q = Once every calendar quarter.

Estimate = Reported flow is to be based on the technical evaluation of the sources contributing to the discharge.
Grab = An individual sample collected over a period of time not to exceed 15-minutes.

*Report as concentration per monitored discharge event.

The CSS shall comply with the bacteria wasteload allocations assigned under the Hunting Creek Bacteria TMDL (See Section 15.a.) at Outfalls 002/003/004 as soon as possible (9VAC25-31-250.A.1.).

The schedule of compliance will be governed and enforced via the DEQ approved Long Term Control Plan Update (Section 21.d.).

**Total Nitrogen = Sum of TKN plus Nitrate+Nitrite

Each outfall shall be monitored during the following calendar year:
Year 2014 – Outfall 001; Year 2015 – Outfall 002; Year 2016 – Outfall 003; and Year 2017 – Outfall 004

Beginning in Year 2018, the permittee shall repeat the aforementioned monitoring schedule, or an alternate monitoring plan accepted by DEQ, until such time a new permit is reissued.

The quarterly monitoring periods shall be January through March, April through June, July through September, and October through December.

20. Other Permit Requirements:

a. Permit Section Part I.B. contains quantification levels and compliance reporting instructions.

9VAC25-31-190.L.4.c. requires an arithmetic mean for measurement averaging and 9VAC25-31-220.D. requires limits be imposed where a discharge has a reasonable potential to cause or contribute to an in-stream excursion of water quality criteria. Specific analytical methodologies for toxics are listed in this permit section as well as quantification levels (QLs) necessary to demonstrate compliance with applicable permit limitations or for use in future evaluations to determine if the pollutant has reasonable potential to cause or contribute to a violation. Required averaging methodologies are also specified.

b. Permit Section Part I.C. details the requirements for Verification of Modeled Events.

The City of Alexandria has applied modeling software since the late 1980s to evaluate the response of the CSS to wet weather events. Several updates have been completed since early model development. The purpose of the model is to possess the ability to characterize the system in order to predict the number and amount of overflows based on the precipitation amount.

The permittee shall continue to update and calibrate as necessary the model, utilizing monitoring data, in order to ascertain the number of overflows and pollutant loadings into each receiving waters.

c. Permit Section Part I.D. requires continuing implementation of the current Long Term Control Plan.

The permittee's Long Term Control Plan (LTCP) was approved by DEQ in February 1999. The developed LTCP consists of the nine minimum technology-based requirements of the CSO Control Policy. The permittee shall continue implementing the current approved LTCP until such time it is updated (Section 21.d.).

21. Other Special Conditions:

a. Water Quality Criteria Reopener. The VPDES Permit Regulation at 9VAC25-31-220.D. requires establishment of effluent limitations to ensure attainment/maintenance of receiving stream water quality criteria. Should effluent monitoring indicate the need for any water quality-based limitations, this permit may be modified or alternatively revoked and reissued to incorporate appropriate limitations.

b. No New Combined Sewers Requirement. No new combined sewers shall be built outside the existing combined sewer system service areas of the City. This requirement shall not be construed to prevent the connection of new sanitary sewers to combined sewers within the existing combined sewer service are for the purpose of conveying sewage to the POTW. No new connections shall be made to the combined sewers where those connections would cause overflows during dry-weather flow conditions or exacerbate CSO events.

c. Reopener Clause. This permit may be modified or revoked and reissued, as provided pursuant to 40 CFR 122.62 and 124.5, for the following reasons:

1). To include new or revised conditions developed to comply with any State or Federal law or regulation that addresses CSOs that is adopted or promulgated subsequent to the effective date of this permit.

2). To include new or revised conditions if new information, not available at the time of permit reissuance, becomes available that would lead to the attainment of Virginia Water Quality Standards.

3). To include new or revised conditions based on new information resulting from implementation of the long term control plan.

d. Long Term Control Plan Update (LTCPU). The permittee shall develop a Long Term Control Plan Update (LTCPU) that will set forth an implementation plan to comply with the approved Hunting Creek Bacteria Total Maximum Daily Load (TMDL). A draft work plan detailing the process and schedule for how the permittee will prepare the LTCPU, including public participation, shall be submitted to DEQ on or before ***9 months from effective date*** for review and comment. The final LTCPU shall be submitted on or before ***4 yrs from effective date*** for DEQ review and acceptance.

The LTCPU shall consist of measureable milestones that will achieve compliance with the aforementioned TMDL as soon as practical but no later than 31 December 2035.

e. Additional Public Notification Requirements. In addition to the requirements in Section 17.e.8., the permittee shall publish all reports on the City's combined sewer web page, notify citizens of CSO conditions semiannually and install universal pictograms at each outfall location.

f. Public Information Meeting. The permittee shall conduct public informational meetings during the development of the LTCPU and prior to submitting the final for DEQ approval (Section 21.d.). These meetings shall be conducted on or before ***18 and 42 months of the effective date***, respectively. These meetings shall, at a minimum, explain combined sewer systems, the impacts on surface waters, progress to date on minimizing the impacts and the proposed LTCPU milestones/schedule in order to comply with the Hunting Creek TMDL.

The permittee shall conduct these meetings at such times as to maximize public participation for comments and inquiries.

g. Funding. The permittee shall outlay a minimum of $2,500,000 during this permit term for CSO abatement projects. The permittee shall submit semiannual reports (Section 21.q.) indicating fund expenditures during the previous time period and future, planned expenditures.

h. Stormwater and *E. coli* Loading Management. The permittee shall, at a minimum, implement the following five programs to achieve a reduction of 5 million gallons of stormwater entering the CSS, or the *E. coli* equivalent, annually by the end of this permit term:

1) Combined Sewer Service Area Reduction Plan (ARP)

The ARP, dated December 2005, requires the separation of storm and sanitary sewers during development projects, whenever feasible, within the CSS sewershed. The permittee has been implementing this policy outside of the permit. The ARP and any future amendments are now incorporated by reference and become enforceable under this permit. The permittee shall submit reports annually detailing ongoing and proposed projects. If a project did not include separation, the permittee shall submit a thorough explanation within the report.

2) Green Initiative

The permittee shall study, implement and promote green infrastructure projects within the CSS sewershed during this permit term. The rationale for this special condition is to reduce the inflow of stormwater during wet weather events. This requirement does not require development/redevelopment projects; rather, the permittee shall undertake an active role in completing projects during this permit term. Projects evaluated shall include, but not limited to: rainfall harvesting, permeable pavements, rain gardens, green roof installation, bioretention cells, urban forestation/reforestation and public education.

3) Green Public Facilities

As an extension of the City's Green Building Policy and to further enhance stormwater management, the permittee shall incorporate green infrastructure into maintenance/enhancement projects at all city facilities (offices, schools, libraries etc) located within the CSS sewershed. Technologies to be considered shall, at a minimum, include those listed under the aforementioned Green Initiative.

Maintenance/enhancement projects for historic designated facilities/structures are exempt from this Special Condition.

4) Payne and Fayette Sewer Separation

The permittee is the process of planning a project with the goal of removing ninety-two (92) sanitary sewer connections within the CSS area and reconnecting them directly to the Potomac Yard Trunk Sewer. During this permit term, the permittee shall proceed with this project (planning/construction) and complete a minimum of sixty (60) reconnections.

The permittee shall submit progress updates with the annual reports until completion of this separation project.

5) Outfall Improvements

The permittee shall evaluate and implement its proposed improvements at Outfall 003 and Outfall 004. The alternatives include weir and structure enhancements to improve captured combined flows, further reduce the likelihood of dry weather overflows and provide ease of maintenance. The permittee shall further evaluate alternatives being considered and shall submit a Preliminary Engineering Report to DEQ once the final alternative is selected.

i. Green Maintenance. The permittee shall establish a database to manage information on all green infrastructure practices put in place that are owned and/or maintained by the City. The database shall ensure scheduling/tracking maintenance activities and ensures maintenance is performed.

j. Annual Loading Reporting. The permittee shall report the total annual loading of *E. coli* from each outfall for each calendar year. The permittee shall utilize a combination of monitoring data along with modeling results to calculate the total annual bacteria loadings into the receiving streams. The event mean concentrations (ECMs) established in the Hunting Creek Bacteria TMDL shall be utilized to compute the loadings. These EMCs may be re-evaluated if monitoring data supports updating these values. Any revised EMC values shall be documented and submitted to DEQ-NRO staff for review and approval. This reporting requirement shall be included in the annual reports.

k. Evaluation of Tidal Intrusion at Outfall 002. The permittee shall submit to DEQ for review and acceptance an evaluation regarding the tidal intrusion into the collection system at Outfall 002 as noted by the EPA inspection conducted in June 2012. The permittee shall review potential alternatives, if necessary, to minimize or eliminate the intrusion. This report will be due 12 months from the effective date of this permit.

l. Annual Reports. The permittee shall submit to DEQ-NRO for review and comment annual reports for the previous calendar year. These reports will be due March 31st of every year detailing the previous year's operation and maintenance of system, updates for the above projects and updates regarding the LTCPU.

m. TMDL Reopener. This special condition is to allow the permit to be reopened if necessary to bring it into compliance with any applicable TMDL that may be developed and approved for the receiving stream.

22. Permit Section Part II. Part II of the permit contains standard conditions that appear in all VPDES Permits. In general, these standard conditions address the responsibilities of the permittee, reporting requirements, testing procedures and records retention.

23. Changes to the Permit from the Previously Issued Permit:

a. The following Special Conditions were added with this reissuance:

- Long Term Control Plan Update (LTCPU)
- Additional Public Notification Requirements
- Public Information Meeting
- Funding
- Stormwater and *E. coli* Loading Management
- Green Maintenance
- Annual Loading Reporting
- Evaluation of Tidal Intrusion at Outfall 002
- Annual Reports

b. Effluent Monitoring:

- The monitoring requirements for antimony, cadmium, chromium III, chromium VI, lead, mercury, nickel and selenium were removed. Sampling results from the past two permit terms indicate that these metals are not present in appreciable amounts.

c. Other:

- Reporting requirements for rainfall and rainfall duration were included with this reissuance.
- Ambient monitoring requirements were removed with this reissuance. The permittee has collected and reported monitoring data for Hunting Creek during the previous two (2) permit terms and concurrent monitoring of Oronoco Bay during the last permit term. This has provided a substantial amount of data that has been utilized in each subsequent reissuance and for the Hunting Creek Bacteria TMDL development. Furthermore, since the designated use impairments have been noted for the receiving waters, additional data would not provide significant information at this time. Future permit terms may require ambient monitoring as the LTCPU is implemented.

24. Variances/Alternate Limits or Conditions: None.

25. Public Notice Information:

First Public Notice Date: TBD 2013 Second Public Notice Date: TBD 2013

Public Notice Information is required by 9VAC25-31-280 B. All pertinent information is on file and may be inspected and copied by contacting the: DEQ Northern Regional Office, 13901 Crown Court, Woodbridge, VA 22193; Telephone No. (703) 583-3873; Douglas.Frasier@deq.virginia.gov. See **Attachment 14** for a copy of the public notice document.

Persons may comment in writing or by email to the DEQ on the proposed permit action and may request a public hearing during the comment period. Comments shall include the name, address and telephone number of the writer and of all persons represented by the commenter/requester and shall contain a complete, concise statement of the factual basis for comments. Only those comments received within this period will be considered. The DEQ may decide to hold a public hearing, including another comment period, if public response is significant and there are substantial, disputed issues relevant to the permit.

Requests for public hearings shall state 1) the reason why a hearing is requested; 2) a brief, informal statement regarding the nature and extent of the interest of the requester or of those represented by the requester, including how and to what extent such interest would be directly and adversely affected by the permit; and 3) specific references, where possible, to terms and conditions of the permit with suggested revisions. Following the comment period, the Board will make a determination regarding the proposed permit action. This determination will become effective, unless the DEQ grants a public hearing. Due notice of any public hearing will be provided. The public may request an electronic copy of the draft permit and fact sheet or review the draft permit and application at the DEQ Northern Regional Office by appointment.

26. Additional Comments:

Previous Board Action(s): None

Staff Comments: None

Public Comment: No comments were received during the public notice.

EPA Checklist: The checklist can be found in **Attachment 15**.

Fact Sheet Attachments

Table of Contents

City of Alexandria Combined Sewer System
VA0087068
2012 Reissuance

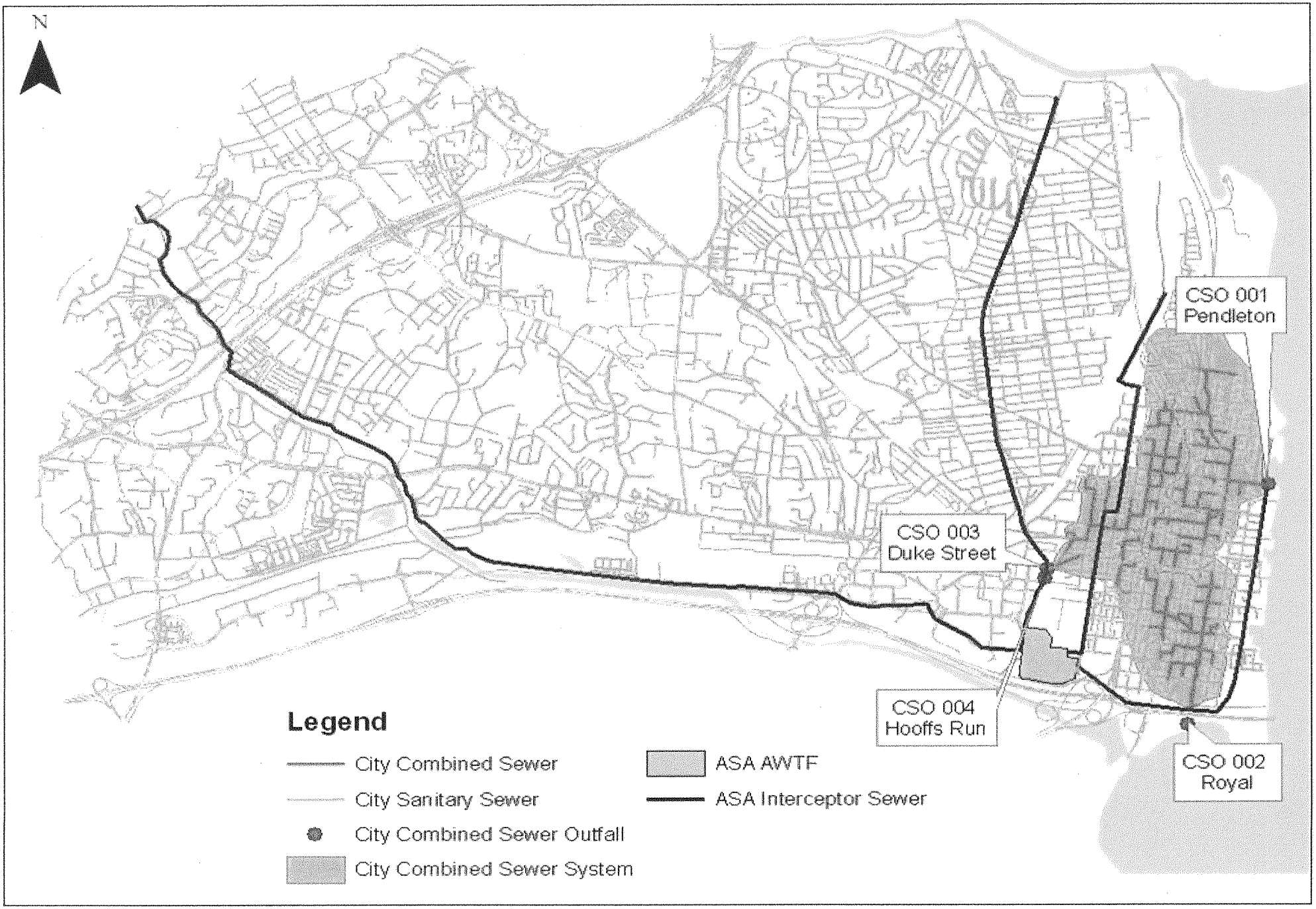
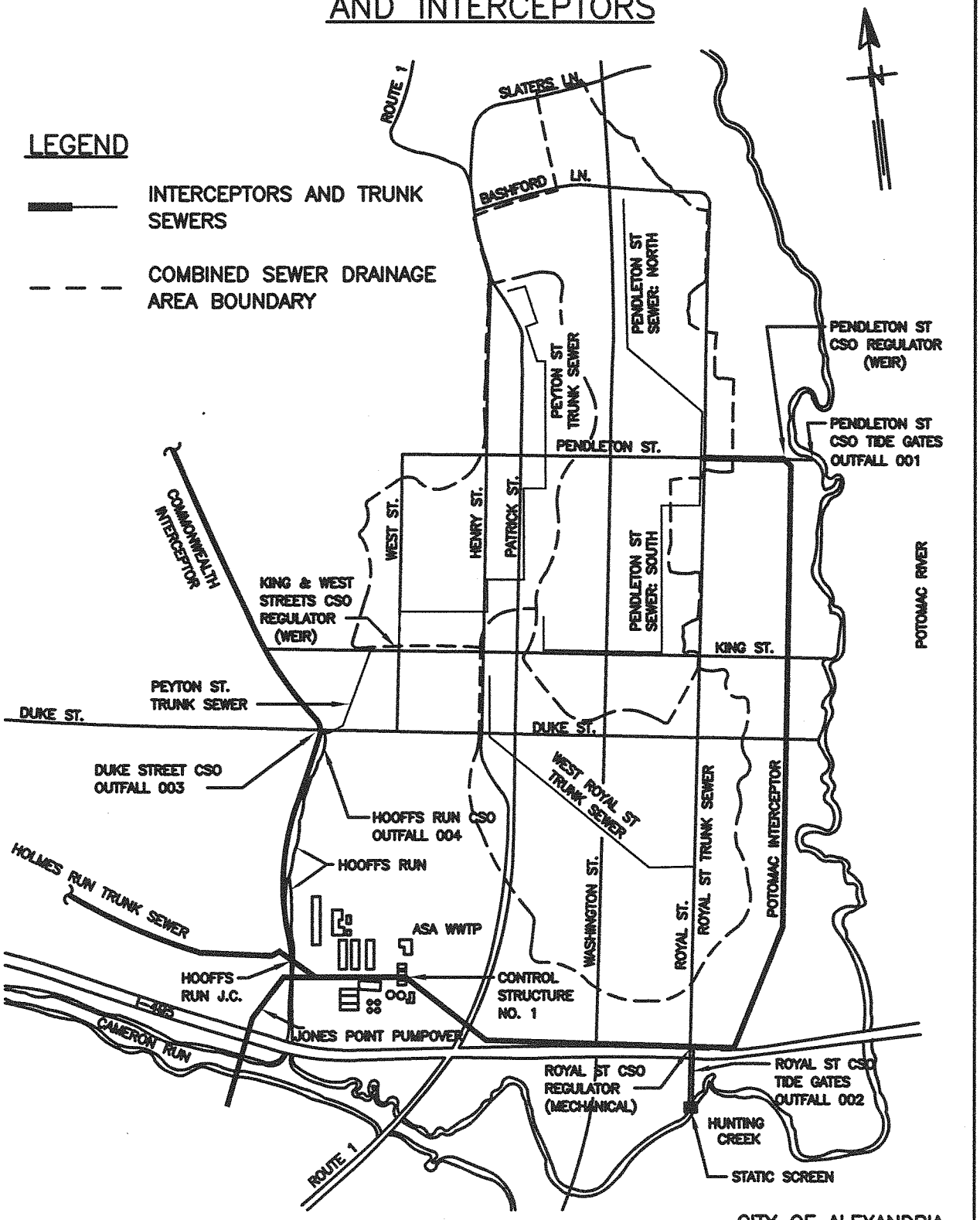

N
CSO 001
Pendleton
CSO 003
Duke Street
CSO 004
Hooffs Run
CSO 002
Royal
Legend
City Combined Sewer
City Sanitary Sewer
City Combined Sewer Outfall
City Combined Sewer System
ASA AWTF
ASA Interceptor Sewer

FIGURE 1

ALEXANDRIA COMBINED TRUNK SEWERS AND INTERCEPTORS



CITY OF ALEXANDRIA
TRANSPORTATION AND ENVIRONMENTAL SERVICES
COMBINED SEWER SYSTEM
2011 ANNUAL REPORT

GREELEY AND HANSEN

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INSPECTION OVERVIEW AND CONDITION OF TREATMENT UNITS

- Mr. Frasier and I met representatives for the City of Alexandria, Greeley and Hansen, and the Alexandria Sanitary Authority at City Hall in the Twin Cities conference room.
- Mr. Sharma presented a short slide presentation overview of the Combined Sewer System (CSS).
- The City of Alexandria continues to require that new developments separate wastewater and stormwater sewer lines as part of development approval. Biggest one- Potomac Yard- trunk sewer installed. New development connects to sanitary trunk sewer rather than adding to the CSS.
- New developments planned for waterfront will be connected to the Potomac Interceptor, and will not affect CSS.

Monitoring

- In accordance with the 2007 monitoring plan, in 2011 staff collected in-stream samples only, none from permitted outfalls.
- Samples collected by Dustin Dvorak (Greeley & Hansen) and sent to Martel Lab in Baltimore for analysis. Two samples per year are split and "QC samples" are sent to another lab to check Martel's results.
- Toured outfalls- no discharge from any.

Outfall PS 001- Pendleton St.

- When sample collected- take boat out to old pier pilings to collect.

PS 002- Royal St.

- ASA maintains regulator.
- Sewer gate is float activated based on water level in sanitary sewer.
- Some tidewater intrusion at high tide.
- Manholes have been raised and new lids installed (hydraulic so they don't come crashing down).
- Racks at overflow gate are checked and cleaned regularly, especially before and after storm events.
- Silt fence was installed above this outfall because run off from the bridge construction project was sending a lot of sediment into embayment. A lot of the silt fence is down- needs to be removed or replaced.

PS 003 – Duke St.

- Not observed- not observable - Confined Space.

PS 004- Hoofs Run

- Regulator is located in manhole in middle of Duke Street- could not observe w/out disrupting traffic.
- Some algae growth at outfall- although appears to be more of result of SW outfall just downstream from Outfall 004.

INSPECTION OVERVIEW AND CONDITION OF TREATMENT UNITS

9 Minimum Standards: I reviewed the 2010 Annual Report (submitted March 2011) for this inspection.

Conduct Proper Operations and Regular Maintenance Programs.

a. Designation of a Manager for the CSS: **Mr. Richard J. Baier, P.E., Director, Transportation and Environmental Services**

b. Inspection and Maintenance of CSS.

i) The permittee shall ensure monthly inspection and maintenance of all outfalls, tide gates, diversion and regulator structures within the CSS. **Y**

ii) The permittee shall inspect each CSS outfall twice a month to confirm that no dry weather overflows are occurring. **Y**

iii) The permittee shall maintain records of inspections and maintenance for all aforementioned structures. **Y**

c. Provision for Trained Staff **Y**

d. Allocation of funds for O&M **Y**

Maximize Use of the Collection System for Storage

a. Maintain all dams or diversion structures at or exceeding their current heights **Y**

b. Minimize discharges from the CSS outfalls by maximizing the storage capacity **Y**

c. Keep maintenance records **Y**

Control of Non-domestic Discharges

a. Maintain records documenting this evaluation and implementation of the selected CSO controls to minimize CSO impacts resulting from non-domestic discharges. **Y**

b. Requiring Significant Industrial Users (SIU) discharging to the CSS to minimize batch discharges during wet weather conditions. **The 2010 annual report states that there are no Significant Industrial Users or remediated dischargers within the CSS.**

c. Continued control of illicit dischargers and/or improper disposal to the CSS via detection and elimination. **Illicit discharges are prohibited via city ordinances.**

Maximize Flow to POTW

a. The City details ongoing efforts to reduce connections between the stormwater sewer and sanitary sewer as described in the annual report to DEQ. **Y. No new separation projects completed since the submission of the 2011 annual report, but there are several on-going projects.**

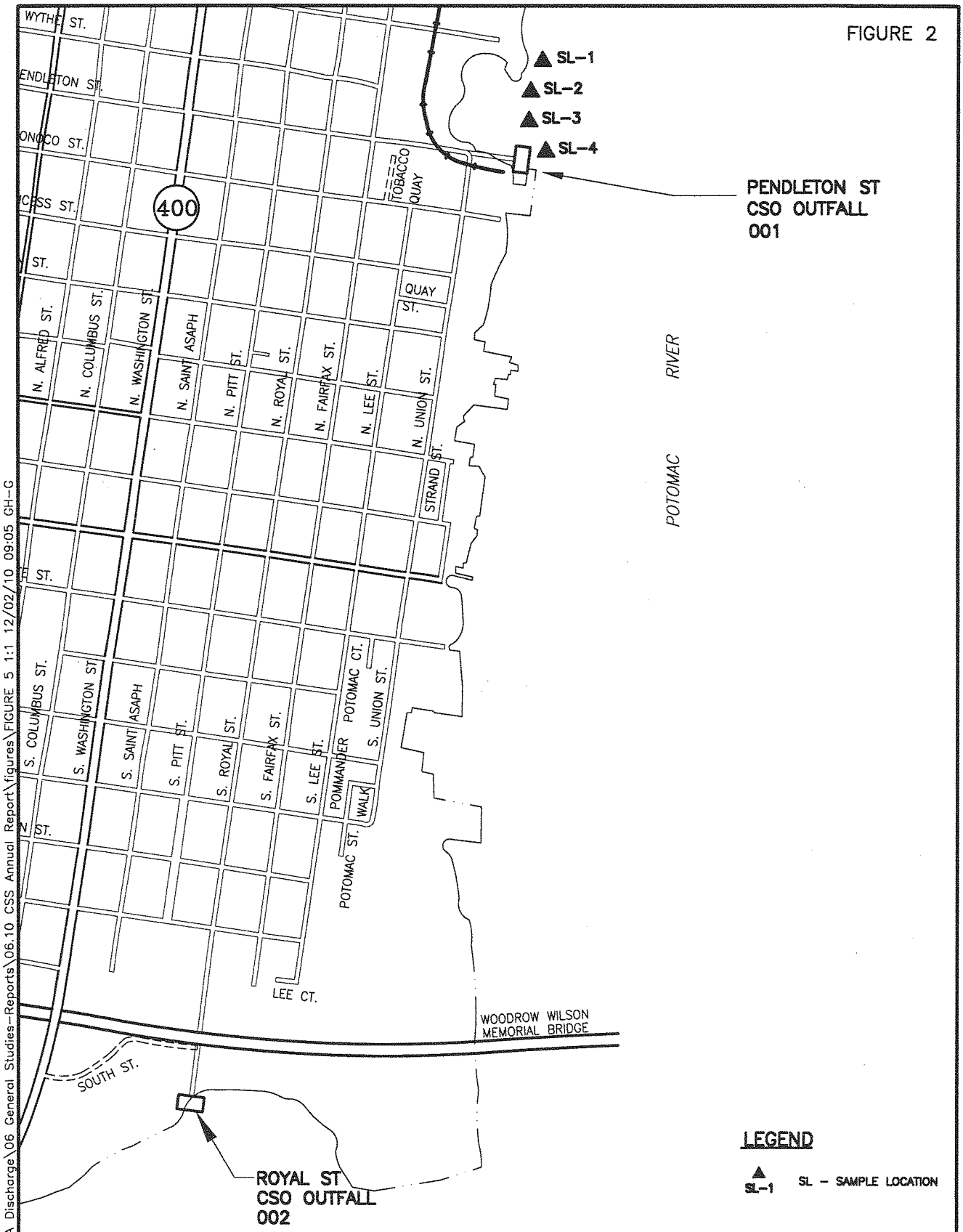
Prohibit Combined Sewer Overflows during Dry Weather

a. All dry weather overflows must be reported to DEQ and the local health department within 24 hours of when the permittee becomes aware of a dry weather overflow. **Y**
No dry weather overflows reported in 2010 or 2011.

b. Upon becoming aware of an overflow, the permittee shall begin corrective action immediately. The permittee shall monitor the dry weather overflow until the overflow has been eliminated. **Y**

c. The permittee shall record, in the inspection log book, an estimate of the beginning and ending times of the discharge, discharge volume and corrective measures taken. **Y**

FIGURE 2



FILE: X:\0057C-VA Discharge\06 General Studies-Reports\06.10 CSS Annual Report\figures\FIGURE 5 1:1 12/02/10 09:05 GH-G

ORONOCO BAY SAMPLING PLAN
SAMPLING LOCATIONS

NOT TO SCALE

GREELEY AND HANSEN

CITY OF ALEXANDRIA
TRANSPORTATION AND ENVIRONMENTAL SERVICES
COMBINED SEWER SYSTEM
2011 ANNUAL REPORT

APPENDIX C: ORONOCO BAY SAMPLING RESULTS

Routine, Routine or CSO	Last CSO Event (days)	Sample ID		Field Data					Laboratory Data (container numbers listed below)																						
									#1 - MPN/100 mL			#2 - mg/L	#3 - mg/L P or N		#4 - mg/L	#5 - mg/L N		#6 - mg/L N	#7 - µg/L										#8 - µg/L	#10 - mg/L
		Date	SL	Measurments Taken From Sampling Container				Hardness mg/L CaCO3	Fecal C.	E. Coli	Total Coliform	CBOD5	TP	TKN	TSS	NH_3-N	NO_3-N	NO_2-N	Antimony	Cadmium	Cr III	Copper	Lead	Mercury	Nickel	Selenium	Silver	Zinc	Cr VI	Oil/Grease
		(yymmdd)	SL1-SL4	Time	Temp (°C)	pH	DO - mg/L																								
Routine	>1	070912	SL1	9:30 AM	26.7	7.19	5	200	900	130	1600	<3.0	0.063	1.2	14	<0.10	0.81	0.043	11	<0.50	3.4	2.8	<2.0	<0.20	<4.0	5.5	<1.0	<20	<5.0	<5.0
Routine	>1	070912	SL2	9:52 AM	27.3	7.19	3.97	200	75	75	1600	<3.0	0.061	0.9	9	<0.10	0.73	0.044	<5.0	<0.50	3.3	2.7	<2.0	<0.20	<4.0	<5.0	<1.0	<20	5.3	<5.0
Routine	>1	070912	SL3	10:05 AM	27.3	7.14	5.54	250	1600	350	> 1600	<3.0	0.064	1.3	16	<0.10	1	0.044	<5.0	<0.50	3.3	2.7	<2.0	0.8	<4.0	<5.0	<1.0	<20	<5.0	<5.0
Routine	>1	070912	SL4	10:25 AM	27	7.3	5.65	200	900	280	900	<3.0	0.062	1.1	12	<0.10	<0.050	<0.043	<5.0	1.2	3.8	2.8	<2.0	<0.20	<4.0	<5.0	<1.0	<20	2.1	<5.0
Routine	>1	070917	SL1	8:47 AM	21.6	7.37	6.75	240	110	110	170	<3.0	0.079	1.2	23	0.3	0.72	0.043	<5.0	0.53	<2.5	2.3	<2.0	<0.20	<5.0	<5.0	<1.0	<20	3	<5.0
Routine	>1	070917	SL2	9:10 AM	22.1	7.09	6.57	200	130	130	300	<3.0	0.077	1.1	22	0.38	0.72	0.044	<5.0	<0.50	<2.5	2.2	<2.0	<0.20	<5.0	<5.0	<1.0	<20	2	<5.0
Routine	>1	070917	SL3	9:15 AM	22.5	7.29	6.54	250	80	80	130	4.3	0.074	1.4	23	0.31	0.75	0.046	<5.0	<0.50	<2.5	2	<2.0	<0.20	<5.0	<5.0	<1.0	<20	2.4	<5.0
Routine	>1	070917	SL4	9:25 AM	22.6	7.45	6.55	250	240	240	300	<3.0	0.25	1.4	17	0.29	0.78	0.045	<5.0	<0.50	<2.5	2	<2.0	<0.20	<5.0	<5.0	<1.0	<20	31	<5.0
Routine	>1	070919	SL1	8:54 AM	22.7	7.68	6.76	240	130	130	230	3.6	0.068	0.66	20	0.44	0.79	0.055	<5.0	1.3	< 2.5	5.8	< 2.0	< 0.20	9.1	< 5.0	< 1.0	< 20	< 5	< 5.0
Routine	>1	070919	SL2	9:03 AM	22.3	7.8	6.88	240	230	230	230	5.4	0.061	0.98	13	0.25	0.72	0.06	< 5.0	< 0.50	< 2.5	3	< 2.0	< 0.20	< 5.0	< 5.0	< 1.0	< 20	< 5	< 5.0
Routine	>1	070919	SL3	9:16 AM	22.5	7.77	6.61	220	230	230	230	3.6	0.056	0.53	11	0.14	0.75	0.048	< 5.0	< 0.50	< 2.5	3	< 2.0	< 0.20	< 5.0	< 5.0	< 1.0	< 20	< 5	< 5.0
Routine	>1	070919	SL4	9:24 AM	22.3	7.58	6.62	240	300	300	300	< 3.0	0.057	0.61	10	0.3	0.76	0.051	< 5.0	< 0.50	< 2.5	2.9	< 2.0	< 0.20	< 5.0	< 5.0	< 1.0	< 20	< 5	< 5.0
Routine	>1	070924	SL1	8:25 AM	24.2	7.74	7.42	96	230	230	230	< 3.0	0.073	0.74	29	< 0.10	1.1	0.04	< 5.0	< 0.50	< 2.5	4	< 2.0	< 0.20	< 5.0	< 5.0	< 1.0	< 20	< 5	< 5.0
Routine	>1	070924	SL2	8:40 AM	24.1	7.74	7.27	95	220	220	220	< 3.0	0.078	0.36	25	< 0.10	1	0.041	< 5.0	< 0.50	< 2.5	3.5	< 2.0	< 0.20	< 5.0	< 5.0	< 1.0	< 20	< 5	< 5.0
Routine	>1	070924	SL3	8:50 AM	24	7.79	7.47	94	170	130	170	< 3.0	0.068	0.52	21	< 0.10	1	0.041	< 5.0	< 0.50	< 2.5	3.3	< 2.0	< 0.20	< 5.0	< 5.0	< 1.0	< 20	< 5	< 5.0
Routine	>1	070924	SL4	9:02 AM	23	7.62	6.77	100	230	230	300	< 3.0	0.045	0.85	11	< 0.10	0.97	0.047	< 5.0	< 0.50	< 2.5	2.1	< 2.0	< 0.20	< 5.0	< 5.0	< 1.0	< 20	5.9	< 5.0
Routine	>1	070926	SL1	8:14 AM	24.2	7.74	6.58	140	230	130	230	< 2.0	0.043	0.3	19	< 0.10	1.1	0.047	< 5.0	< 0.50	< 2.5	2.3	< 2.0	< 0.20	< 5.0	< 5.0	< 1.0	< 20	5.9	< 5.0
Routine	>1	070926	SL2	8:28 AM	24.4	7.78	6.73	140	270	270	800	< 3.0	0.041	0.12	14	< 0.10	1	0.044	< 5.0	< 0.50	< 2.5	2.1	< 2.0	< 0.20	< 5.0	< 5.0	< 1.0	< 20	<5.0	< 5.0
Routine	>1	070926	SL3	8:37 AM	24.3	7.79	6.87	140	300	300	300	< 3.0	0.06	0.43	14	< 0.10	1.2	0.047	< 5.0	0.51	< 2.5	2.2	< 2.0	< 0.20	< 5.0	< 5.0	< 1.0	< 20	5.3	< 5.0
Routine	>1	070926	SL4	8:49 AM	24.2	7.69	6.85	130	230	230	230	< 3.0	0.042	0.6	11	< 0.10	1.2	0.047	< 5.0	< 0.50	< 2.5	2.2	< 2.0	< 0.20	< 5.0	< 5.0	< 1.0	< 20	<5.0	< 5.0
Routine	>1	071001	SL1	8:29 AM	23.1	7.81	6.96	140	500	500	500	< 2.0	0.086	1.9	42	< 0.10	1.1	0.043	< 5.0	< 0.50	< 2.5	2.6	< 2.0	< 0.20	< 5.0	< 5.0	< 1.0	< 20	8.8	< 5.0
Routine	>1	071001	SL2	8:48 AM	23	7.86	7.2	140	5,000	3,000	9,000	< 2.0	0.076	0.19	40	0.13	1.1	0.076	< 5.0	< 0.50	< 2.5	2.4	< 2.0	< 0.20	< 5.0	< 5.0	< 1.0	< 20	11	< 5.0
Routine	>1	071001	SL3	8:58 AM	23.2	7.78	7.32	140	500	500	500	< 2.0	0.073	< 0.10	27	< 0.10	1.1	0.043	< 5.0	< 0.50	< 2.5	2.4	< 2.0	< 0.20	< 5.0	< 5.0	< 1.0	< 20	<5.0	< 5.0
Routine	>1	071001	SL4	9:29 AM	23.3	7.81	7.04	140	300	300	300	< 2.0	0.057	0.27	17	0.25	1.1	0.042	< 5.0	< 0.50	< 2.5	2.5	< 2.0	< 0.20	< 5.0	< 5.0	< 1.0	< 20	<5.0	< 5.0
Routine	>1	071003	SL1	8:28 AM	24	7.6	6.94	150	2400	2400	2400	< 2.0	0.054	1.4	11	< 0.12	1.3	0.058	< 5.0	< 0.50	< 2.5	4.4	< 2.0	< 0.20	< 5.0	< 5.0	< 1.0	< 20	<5.0	< 5.0
Routine	>1	071003	SL2	8:40 AM	23.9	7.76	6.89	140	1700	1700	1700	< 3.0	0.054	0.17	9.5	< 0.11	1.2	0.057	< 5.0	< 0.50	< 2.5	4.4	< 2.0	< 0.20	< 5.0	< 5.0	< 1.0	< 20	<5.0	< 5.0
Routine	>1	071003	SL3	8:49 AM	23.7	7.87	6.93	140	2400	2400	2400	< 3.0	0.056	0.33	11	0.16	1.1	0.051	< 5.0	< 0.50	2.6	3.6	< 2.0	< 0.20	< 5.0	< 5.0	< 1.0	< 20	5.3	< 5.0
Routine	>1	071003	SL4	8:57 AM	23.7	7.9	6.79	130	500	500	500	< 3.0	0.064	3.3	16	< 0.12	1.1	0.055	< 5.0	< 0.50	< 2.5	3.6	< 2.0	< 0.20	< 5.0	< 5.0	< 1.0	< 20	<5.0	< 5.0
Routine	>1	071008	SL1	8:57 AM	25.8	7.91	6.98	140	700	700	700	< 3.0	0.072	1.1	27	< 0.12	1.1	0.048	14	< 0.50	< 2.5	4.6	< 2.0	< 0.20	< 5.0	< 5.0	< 1.0	< 20	<5.0	< 5.0
Routine	>1	071008	SL2	9:10 AM	25.7	7.73	6.84	140	500	500	500	< 3.0	0.065	1.2	12	< 0.12	1.1	0.046	< 5.0	< 0.50	< 2.5	4.4	< 2.0	< 0.20	< 5.0	< 5.0	< 1.0	< 20	<5.0	< 5.0
Routine	>1	071008	SL3	9:17 AM	25.7	7.89	6.31	140	700	700	700	< 3.0	0.06	1.1	14	< 0.11	1.1	0.069	< 5.0	< 0.50	< 2.5	4.1	< 2.0	< 0.20	< 5.0	< 5.0	< 1.0	< 20	<5.0	< 5.0
Routine	>1	071008	SL4	9:26 AM	25.1	7.84	5.81	140	300	300	500	< 3.0	0.06	1.2	11	< 0.11	1	0.049	< 5.0	< 0.50	< 2.5	3.6	< 2.0	< 0.20	< 5.0	< 5.0	< 1.0	< 20	<5.0	< 5.0
CSO	1	071025	SL1-1	13:20	18.4	7.84	8.28	N/A	16,000	5,000	16,000	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
CSO	1	071025	SL1-2	15:25	18.1	7.57	8.06	N/A	>16,000	16,000	>16,000	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
CSO	1	071025	SL1-3	5:14	18.8	9.44	8.3	N/A	2200	2200	5000	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
CSO	1	071025	SL2-1	13:30	19.1	7.67	8.4	N/A	9000	9000	>16,000	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
CSO	1	071025	SL2-2	15:35	18.77	7.29	8	N/A	9000	3000	>16,000	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
CSO	1	071025	SL2-3	17:25	18.7	9.44	8.11	N/A	2200	1300	5000	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
CSO	1	071025	SL3-1	13:53	19.1	7.63	8.17	120	>16,000	>16,000	>16,000	4.6	0.13	1.2	66	<0.12	0.76	0.044	<5.0	<0.50	<2.5	3.7	<2.0	<0.20	<5.0	<5.0	<1.0	<20	<5.0	<5.0
CSO	1	071025	SL3-2	15:43	18.5	7.29	8.79	140	9000	5000	16,000	<3.0	0.07	0.67	35	<0.10	0.56	0.027	<5.0	<0.50	<2.5	2.7	<2.0	<0.20	<5.0	<5.0	<1.0	<20	<5.0	<5.0
CSO	1	071025	SL3-3	17:31	18.8	7.9	8.01	150	2,800	700	9,000	<3.0	0.066	<0.12	39	<0.10	0.54	0.028	<5.0	<0.50	<2.5	2.4	<2.0	<0.20	<5.0	<5.0	<1.0	<20	<5.0	<5.0
CSO	1	071025	SL4-1	14:11	17.6	7.58	8.25	N/A	>16,000	>16,000	>16,000	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
CSO	1	071025	SL4-2	15:56	18.5	7.32	7.92	N/A	16,000	16,000	>16,000	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
CSO	1	071025	SL4-3	17:41	18.8	7.68	8.01	N/A	1400	1400	5000	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
CSO	1	080112	SL1-1	7:12	7.9	MP	MP	N/A	800	800	800	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
CSO	1	080112	SL1-2	8:40	7.8	MP	MP	N/A	200	200	400	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
CSO	1	080112	SL1-3	10:10	7.6	MP	MP	N/A	400	400	400	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
CSO	1	080112	SL2-1	7:18	8.0	MP	MP	N/A	200	200	200	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
CSO	1	080112	SL2-2	8:45	7.9	MP	MP	N/A	400	400	400	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
CSO	1	080112	SL2-3	10:13	7.5	MP	MP	N/A	400	400	400	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
CSO	1	080112	SL3-1	7:21	7.8	MP	MP	130	800	800	800	<3.0	0.029	0.99	25	0.13	1.6	<0.012	<5.0	<0.50	<2.5	<2.0	<2.0	<0.20	<5.0	<5.0	<1.0	<0.020	<5.0	<5.0
CSO	1	080112	SL3-2	8:48	7.8	MP	MP	130	1300	1300	1300	<3.0	0.057	0.84	8.5	0.11	1.6	<0.012	<5.0	<0.50	<2.5	<2.0	<2.0	<0.20	<5.0	<5.0	<1.0	<0.020	<5.0	<5.0
CSO	1	080112	SL3-3	10:16	7.7	MP	MP	130	800	800	800	<3.0	0.051	1.1	14	0.18	1.6	<0.012	<5.0	<0.50	<2.5	<2.0	<2.0	<0.20	<5.0	<5.0	<1.0	<0.020	<5.0	<5.0
CSO	1	080112	SL4-1	7:28	7.8	MP	MP	N/A	200	200	200	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
CSO	1	080112	SL4-2	8:55	7.8	MP	MP	N/A	200	200	800	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
CSO	1	080112	SL4-3	10:26	7.7	MP	MP	N/A	800	800	800	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A

Note:
N/A = Not Analyzed; Bacteria parameters analyzed only per monitoring plan
MP = Measurement Problem; Probe Malfunction
0 = CSO ongoing
1= CSO within 24 Hours
>1 = No CSO within last 24 Hours

APPENDIX C: ORONOCO BAY SAMPLING RESULTS

Routine or CSO event	Last CSO Event (days)	Sample ID: Date (yymmdd)	Sample ID: SL SL1-SL4	Field Data: Measurements Taken From Sampling Container in Field: Time	Temp (°C)	pH	DO - mg/L	Hardness SM 2340 C mg/L CaCO3	Laboratory Data (container numbers listed below): MPN/100 mL: SM 9221E Fecal C.	SM 9223B E. Coli	SM 9221B Total Coliform	mg/L: SM 5210B CBOD5	mg/L P or N: EPA 365.1 TP	EPA 351.2 TKN	mg/L: SM 2540D TSS	mg/L N: SM 4500NH3-G NH_3-N	EPA 353.2 NO_3-N	mg/L N: EPA 353.2 NO_2-N	µg/L: EPA 200.8 Antimony	EPA 200.8 Cadmium	EPA 200.8 Cr III	EPA 200.8 Copper	EPA 200.8 Lead	EPA 245.1 Mercury	EPA 200.8 Nickel	EPA 200.8 Selenium	EPA 200.8 Silver	EPA 200.8 Zinc	µg/L: SM 3500 CR D Cr VI	mg/L: EPA 1664A Oil/Grease
Routine	>1	042308	SL1	10:22 AM	18.6	6.09	MP	110	500	500	500	3.4	0.029	1.30	28.0	0.25	0.82	0.027	<5.0	<1.0	<10.0	2.6	<5.0	<0.20	<4.0	<5.0	<0.20	<10.0	<5.0	<5.0
Routine	>1	042308	SL2	10:37 AM	18.1	5.75	MP	84	1,600	1,600	1,600	3.9	0.026	1.10	23.0	<0.10	0.82	0.082	<5.0	<1.0	<10.0	2.3	<5.0	<0.20	<4.0	<5.0	<0.20	<10.0	<5.0	<5.0
Routine	>1	042308	SL3	10:45 AM	18.6	5.87	MP	95	900	300	1,600	3.6	0.030	1.30	26.0	<0.10	0.79	0.019	<5.0	2.5	<10.0	5.0	<5.0	<0.20	<4.0	<5.0	<0.20	11.0	<5.0	<5.0
Routine	>1	042308	SL4	10:54 AM	18.8	6.46	MP	94	500	240	1,600	3.6	0.030	1.20	<10.0	<0.10	0.80	0.027	<5.0	<1.0	<10.0	2.2	<5.0	<0.20	<4.0	<5.0	<0.20	<10.0	<5.0	<5.0
Routine	>1	043008	SL1	10:31 AM	19.4	6.41	9.56	90	<20,000	<20,000	<20,000	5.5	<0.010	0.95	16.0	0.27	0.10	0.024	<5.0	<1.0	<10.0	3.6	<5.0	<0.20	<4.0	<5.0	<0.20	13.0	<5.0	<5.0
Routine	>1	043008	SL2	10:42 AM	22.7	7.10	8.71	86	20,000	20,000	20,000	<5.0	<0.010	0.87	23.0	0.11	0.16	0.025	<5.0	<1.0	<10.0	3.3	<5.0	<0.20	<4.0	<5.0	<0.20	<10.0	5.6	<5.0
Routine	>1	043008	SL3	10:52 AM	26.4	7.22	8.51	94	<20,000	<20,000	<20,000	<5.0	<0.010	0.56	27.0	0.26	0.29	0.024	<5.0	<1.0	<10.0	3.1	<5.0	<0.20	<4.0	<5.0	<0.20	<10.0	<5.0	<5.0
Routine	>1	043008	SL4	11:04 AM	27.7	6.86	8.44	88	20,000	20,000	<20,000	<5.0	<0.010	0.81	16.0	<0.10	0.39	0.026	<5.0	<1.0	<10.0	2.9	<5.0	<0.20	<4.0	<5.0	<0.20	<10.0	<5.0	<5.0
Routine	>1	050508	SL1	10:22 AM	29.3	6.56	10.90	86	1,300	1,300	2,300	<3.0	0.047	0.46	20.0	0.14	1.20	0.016	<5.0	<1.0	<10.0	2.0	<5.0	<0.20	<4.0	<5.0	<0.20	<10.0	<5.0	<5.0
Routine	>1	050508	SL2	10:30 AM	27.0	7.03	10.33	76	200	200	800	<3.0	0.039	0.32	21.0	<0.10	1.10	0.017	<5.0	<1.0	<10.0	2.0	<5.0	<0.20	<4.0	<5.0	<0.20	<10.0	<5.0	<5.0
Routine	>1	050508	SL3	10:41 AM	29.6	6.55	11.63	84	200	200	800	<3.0	<0.010	0.37	11.0	<0.10	1.10	0.016	<5.0	<1.0	<10.0	1.9	<5.0	<0.20	<4.0	<5.0	<0.20	<10.0	<5.0	<5.0
Routine	>1	050508	SL4	10:50 AM	30.6	6.90	10.97	80	800	800	800	<3.0	<0.010	0.32	<10.0	<0.10	1.20	0.016	<5.0	<1.0	<10.0	1.9	<5.0	<0.20	<4.0	<5.0	<0.20	<10.0	<5.0	<5.0
Routine	>1	050708	SL1	10:20 AM	31.4	6.55	8.81	78	400	400	400	<3.0	0.034	0.66	9.0	0.26	1.10	0.016	<5.0	<1.0	<10.0	1.0	<5.0	<0.20	<4.0	<5.0	<0.20	<10.0	<5.0	<5.0
Routine	>1	050708	SL2	10:30 AM	32.2	6.85	8.81	86	<200	<200	<200	<3.0	0.039	0.50	5.5	0.18	1.20	0.016	<5.0	<1.0	<10.0	1.3	<5.0	<0.20	<4.0	<5.0	<0.20	5.3	<5.0	<5.0
Routine	>1	050708	SL3	10:40 AM	35.0	7.23	8.68	90	200	200	200	<3.0	0.063	0.63	12.0	<0.10	1.20	0.015	<5.0	<1.0	<10.0	<1.0	<5.0	<0.20	<4.0	<5.0	<0.20	<10.0	<5.0	<5.0
Routine	>1	050708	SL4	10:52 AM	23.1	6.73	9.02	84	200	200	200	<3.0	0.042	0.92	<5.0	<0.10	1.20	0.014	<5.0	<1.0	<10.0	1.0	<5.0	<0.20	<4.0	<5.0	<0.20	<10.0	<5.0	<5.0
Routine	>1	051408	SL1	11:30 AM	19.2	6.77	10.60	70	24,000	8,000	24,000	4.4	0.097	1.00	62.0	0.24	<0.050	0.017	<5.0	<1.0	<10.0	2.2	<5.0	<0.20	<4.0	<5.0	<0.20	<10.0	<5.0	<5.0
Routine	>1	051408	SL2	11:48 AM	31.5	6.70	12.00	66	13,000	8,000	24,000	3.5	0.100	0.38	45.0	0.21	0.87	0.018	<5.0	<1.0	<10.0	2.1	<5.0	<0.20	<4.0	<5.0	<0.20	<10.0	<5.0	<5.0
Routine	>1	051408	SL3	12:03 PM	32.8	6.70	11.50	55	8,000	8,000	24,000	4.1	0.110	0.38	26.0	0.21	0.89	0.016	<5.0	<1.0	<10.0	2.2	<5.0	<0.20	<4.0	<5.0	<0.20	<10.0	<5.0	<5.0
Routine	>1	051408	SL4	12:18 PM	24.6	6.70	11.40	55	13,000	13,000	13,000	4.1	0.090	0.32	31.0	0.22	0.89	0.017	<5.0	<1.0	<10.0	2.1	<5.0	<0.20	<4.0	<5.0	<0.20	<10.0	<5.0	<5.0
Routine	>1	051908	SL1	11:47 AM	22.4	6.87	1.017	87	1,100	1,100	3,000	<3.0	0.031	0.50	17.0	<0.10	1.30	0.016	<5.0	<1.0	<10.0	1.8	<5.0	<0.20	<4.0	<5.0	<0.20	<10.0	<5.0	<5.0
Routine	>1	051908	SL2	12:02 PM	30.2	6.56	10.22	84	200	200	2,300	<3.0	0.032	0.47	18.0	0.24	1.30	0.014	<5.0	<1.0	<10.0	1.6	<5.0	<0.20	<4.0	<5.0	<0.20	<10.0	<5.0	<5.0
Routine	>1	051908	SL3	12:12 PM	28.1	6.46	9.70	70	1,300	1,300	5,000	<3.0	0.029	0.44	18.0	<0.10	1.30	0.014	<5.0	<1.0	<10.0	1.7	<5.0	<0.20	<4.0	<5.0	<0.20	<10.0	<5.0	<5.0
Routine	>1	051908	SL4	12:22 PM	29.2	6.7	8.90	73	200	200	2,300	<3.0	0.028	0.46	17.0	0.36	1.20	0.015	<5.0	<1.0	<10.0	1.4	<5.0	<0.20	<4.0	<5.0	<0.20	<10.0	<5.0	<5.0
Routine	>1	052208	SL1	10:33 AM	17.1	6.55	9.77	71	200	200	1,300	<3.0	0.014	0.52	13.0	<0.10	1.20	0.012	<5.0	<1.0	<10.0	1.5	<5.0	<0.20	<4.0	<5.0	<0.20	<10.0	<5.0	<5.0
Routine	>1	052208	SL2	10:42 AM	16.8	6.67	8.65	70	200	200	2,300	<3.0	0.026	0.46	21.0	<0.10	1.20	0.012	<5.0	<1.0	<10.0	1.4	<5.0	<0.20	<4.0	<5.0	<0.20	<10.0	<5.0	<5.0
Routine	>1	052208	SL3	10:52 AM	16.7	6.66	9.66	71	200	200	3,000	<3.0	0.015	0.49	9.0	<0.10	1.20	0.012	<5.0	<1.0	<10.0	1.4	<5.0	<0.20	<4.0	<5.0	<0.20	<10.0	<5.0	<5.0
Routine	>1	052208	SL4	11:01 AM	15.7	6.52	9.37	74	200	200	2,300	<3.0	0.650	0.47	20.0	<0.10	1.20	<0.012	<5.0	<1.0	<10.0	1.2	<5.0	<0.20	<4.0	<5.0	<0.20	<10.0	<5.0	<5.0
Routine	>1	052708	SL1	10:45 AM	19.8	7.66	14.74	82	400	400	1,300	<2.0	<0.010	0.50	11.0	0.56	1.20	<0.012	<5.0	<1.0	<10.0	1.1	<5.0	<0.20	<4.0	<5.0	0.20	<10.0	<5.0	<5.0
Routine	>1	052708	SL2	3:55 PM	19.5	6.69	14.20	80	400	400	2,300	<2.0	<0.010	0.49	7.0	0.42	1.20	<0.012	<5.0	<1.0	<10.0	<1.0	<5.0	<0.20	<4.0	<5.0	0.20	<10.0	<5.0	<5.0
Routine	>1	052708	SL3	11:10 AM	19.6	6.77	14.25	76	200	200	200	<2.0	0.220	0.41	8.2	0.45	1.20	0.012	<5.0	<1.0	<10.0	<1.0	<5.0	<0.20	<4.0	<5.0	0.20	<10.0	<5.0	<5.0
Routine	>1	052708	SL4	11:29 AM	21.0	674	12.75	80	400	400	400	<2.0	<0.010	0.43	8.3	0.50	1.10	0.013	<5.0	<1.0	<10.0	1.3	<5.0	<0.20	<4.0	<5.0	<0.20	<10.0	<5.0	<5.0
CSO event	1	042908	SL1-1	11:02 AM	18.8	6.64	9.04		<20,000	<20,000	20,000																			
CSO event	1	042908	SL1-2	12:36 PM	18.9	6.89	9.56		<20,000	<20,000	20,000																			
CSO event	1	042908	SL1-3	2:12 PM	19.4	6.52	MP		<20,000	<20,000	<20,000																			
CSO event	1	042908	SL2-1	11:17 AM	18.8	6.47	8.79		<20,000	<20,000	20,000																			
CSO event	1	042908	SL2-2	12:50 PM	18.1	6.46	10.65		<20,000	<20,000	20,000																			
CSO event	1	042908	SL2-3	2:17 PM	19.0	6.31	MP		<20,000	<20,000	20,000																			
CSO event	1	042908	SL3-1	11:26 AM	18.6	6.18	8.54	92	<20,000	<20,000	40,000	5.1	<0.010	1.20	35.0	1.60	0.51	0.026	<5.0	<1.0	<10.0	7.2	<5.0	<0.20	<4.0	<5.0	<0.20	<10.0	<5.0	<5.0
CSO event	1	042908	SL3-2	12:57 PM	17.9	7.2	MP	86	<20,000	<20,000	<20,000	5.1	<0.010	0.74	20.0	0.25	0.16	0.021	<5.0	<1.0	<10.0	4.2	<5.0	<0.20	<4.0	<5.0	<0.20	0.013	<5.0	<5.0
CSO event	1	042908	SL3-3	2:22 PM	18.4	6.34	MP	66	<20,000	<20,000	3,000,000	3.3	<0.010	0.80	16.0	0.12	0.27	0.023	<5.0	<1.0	<10.0	3.6	<5.0	<0.20	<4.0	<5.0	<0.20	<10.0	<5.0	<5.0
CSO event	1	042908	SL4-1	11:36 AM	18.2	6.5	8.63		<20,000	<20,000	20,000																			
CSO event	1	042908	SL4-2	1:20 PM	18.4	6.94	MP		<20,000	<20,000	20,000																			
CSO event	1	042908	SL4-3	2:27 PM	19.0	6.35	MP		<20,000	<20,000	20,000																			
CSO event	1	052008	SL1-1	11:00 AM	17.1	7.25	12.75		300	240	300																			
CSO event	1	052008	SL1-2	12:30 PM	17.7	6.65	10.38		240	240	240																			
CSO event	1	052008	SL1-3	2:00 PM	16.9	6.54	11.57		240	240	240																			
CSO event	1	052008	SL2-1	11:09 AM	16.9	6.67	12.87		240	240	240																			
CSO event	1	052008	SL2-2	12:35 PM	17.5	7.00	10.80		900	500	500																			
CSO event	1	052008	SL2-3	2:05 PM	16.8	6.25	11.42		300	240	240																			
CSO event	1	052008	SL3-1	11:16 AM	16.9	6.78	12.07	70	900	900	900	<3.0	0.079	0.47	21	<0.10	1.10	0.015	<5.0	<1.0	<10.0	3.3	<5.0	<0.20	<4.0	<5.0	<0.20	<10.0	<5.0	<5.0
CSO event	1	052008	SL3-2	12:42 PM	17.6	6.68	11.65	74	500	500	500	<3.0	0.033	0.46	26	<0.10	1.10	0.015	<5.0	<1.0	<10.0	2.1	<5.0	<0.20	<4.0	<5.0	<0.20	<10.0	<5.0	<5.0
CSO event	1	052008	SL3-3	2:10 PM	16.9	6.29	11.14	80	500	500	>1,600	<3.0	0.120	0.50	22	<0.10	1.20	0.015	<5.0	<1.0	<10.0	1.8	<5.0	<0.20	<4.0	<5.0	<0.20	<10.0	<5.0	<5.0
CSO event	1	052008	SL4-1	11:25 AM	17.6	6.51	12.20		>1,600	>1,600	>1,600																			
CSO event	1	052008	SL4-2	12:51 PM	17.6	6.69	11.60		>1,600	>1,600	>1,600																			
CSO event	1	052008	SL4-3	2:18 PM	16.7	6.08	11.20		>1,600	300	500																			

Note:

Sampling analytical testing conducted by Microbac Laboratories, Inc.

SL= Sample Location -Refer To Figure 4.

MP = Measurement Problem; DO Probe Malfunction - DO Probe either recalibrated in field and/or DO membrane replaced following sampling

1= CSO within 24 Hours

>1 = No CSO within last 24 Hours

CSO event samples collected within 24 hours of activation

APPENDIX D: ORONOCO BAY SAMPLING RESULTS

Routine or CSO event	Last CSO Event (days)	Sample ID Date (mmddyy)	Sample ID SL SL1-SL4	Field Data Time	Temp (°C)	pH	DO - mg/L	Hardness SM 2340 C mg/L CaCO3	MPN/100 mL SM 9221E Fecal C.	SM 9223B E. Coli	SM 9221B Total Coliform	mg/L SM 5210B CBOD5	mg/L P or N EPA 365.1 TP	EPA 351.2 TKN	mg/L SM 2540D TSS	mg/L N SM 4500NH3-G NH_3-N	EPA 353.2 NO_3-N	mg/L N EPA 353.2 NO_2-N	µg/L EPA 200.8 Antimony	EPA 200.8 Cadmium	EPA 200.8 Cr III	EPA 200.8 Copper	EPA 200.8 Lead	EPA 245.1 Mercury	EPA 200.8 Nickel	EPA 200.8 Selenium	EPA 200.8 Silver	EPA 200.8 Zinc	µg/L SM 3500 CR D Cr VI	mg/L EPA 1664A Oil/Grease
CSO	1	042109	SL1-1	10:21 AM	16.8	6.51	6.29		800	500	9,000																			
CSO	1	042109	SL1-2	11:45 AM	17.9	6.50	6.97		1,300	1,100	>=16,000																			
CSO	1	042109	SL1-3	1:15 PM	18.6	6.75	6.22		1,700	500	9,000																			
CSO	1	042109	SL2-1	10:26 AM	16.9	6.76	7.04		1,400	3,000	>=16,000																			
CSO	1	042109	SL2-2	11:50 AM	16.7	6.46	6.73		1,100	3,000	16,000																			
CSO	1	042109	SL2-3	1:21 PM	17.9	6.87	7.22		800	2,200	>=16,000																			
CSO	1	042109	SL3-1	10:29 AM	17.0	6.80	6.90	90	2,300	1,700	16,000	<1	0.08	0.7	25	0.4	0.79	<0.02	<5	<0.5	<2	2	<2	<0.5	<2	<5	<0.2	<10	<10	<5*
CSO	1	042109	SL3-2	11:55 AM	17.5	6.48	7.41	84	1,300	800	5,000	<1	0.10	0.8	22	0.3	0.81	<0.02	<5	<0.5	<2	2	<2	<0.5	<2	<5	<0.2	<10	<10	<5*
CSO	1	042109	SL3-3	1:29 PM	18.1	6.70	7.11	84	1,700	2,200	16,000	<1	0.09	0.8	21	<0.2	0.83	<0.02	<5	<0.5	<2	3	<2	<0.5	<2	<5	<0.2	<10	<10	<5*
CSO	1	042109	SL4-1	10:43 AM	16.9	6.65	7.44		700	210	16,000																			
CSO	1	042109	SL4-2	12:04 AM	18.1	6.45	6.84		1,700	700	16,000																			
CSO	1	042109	SL4-3	1:38 PM	18.5	6.82	7.24		8,000	800	3,500																			
Routine	>1	042309	SL1	8:52 AM	14.3	6.73	10.05	92	500	3,000*	1,700*	<1	0.10	1.0	35	0.2	0.51	<0.02	<5	<0.5	<2	2	<2	<0.5	9	<5	<0.2	<10	<10	<5*
Routine	>1	042309	SL2	9:07 AM	14.6	6.44	9.35	84	170	220*	280*	<1	0.12	1.5	42	0.3	0.51	<0.02	<5	<0.5	<2	2	<2	<0.5	<2	<5	<0.2	<10	<10	<5*
Routine	>1	042309	SL3	9:15 AM	14.5	6.56	9.72	92	170	220*	1,600*	<1	0.11	1.1	41	0.3	0.52	<0.02	<5	<0.5	<2	2	<2	<0.5	<2	<5	<0.2	<10	<10	<5*
Routine	>1	042309	SL4	9:24 AM	13.2	6.34	9.79	96	280	170*	500*	<1	0.11	1.6	38	<0.2	0.54	<0.02	<5	<0.5	<2	2	<2	<0.5	<2	<5	<0.2	<10	<10	<5*
Routine	>1	042709	SL1	8:56 AM	17.7	6.67	9.33	88	30*	17*	50*	<1	0.08	0.9	10	0.4	0.73	<0.02	<5	<0.5	<2	<1	<2	<0.5	<2	<5	<0.2	<10	<10	<5*
Routine	>1	042709	SL2	9:05 AM	17.6	6.75	9.00	84	30*	21*	50*	<1	0.07	1.1	9	0.2	0.75	<0.02	<5	<0.5	<2	1	<2	<0.5	<2	<5	<0.2	<10	<10	<5*
Routine	>1	042709	SL-3	9:13 AM	17.6	6.76	8.35	80	23*	21*	26*	<1	0.06	1.7	17	0.3	0.75	<0.02	<5	<0.5	<2	<1	<2	<0.5	<2	<5	<0.2	<10	<10	<5*
Routine	>1	042709	SL-4	9:22 AM	17.8	6.68	9.16	84	23*	30*	22*	<1	0.08	0.9	7	0.3	0.76	<0.02	<5	<0.5	<2	<1	<2	<0.5	<2	<5	<0.2	<10	<10	<5*
Routine	>1	043009	SL-1	8:50 AM	19.2	7.02	7.80	84	110	30	22	<1	0.08	1.0	21	0.3	0.83	<0.02	<5	<0.5	<2	1	<2	<0.5	<2	<5	<0.2	<10	<10	8*
Routine	>1	043009	SL-2	9:00 AM	19.2	6.57	7.76	96	23	11	22	<1	0.06	0.6	16	0.3	0.75	<0.02	<5	<0.5	<2	<1	<2	<0.5	<2	<5	<0.2	<10	<10	<5*
Routine	>1	043009	SL-3	9:10 AM	19.0	6.88	8.06	80	30	17	17	<1	0.09	1.5	17	<0.2	0.75	<0.02	<5	<0.5	<2	<1	<2	<0.5	<2	<5	<0.2	<10	<10	<5*
Routine	>1	043009	SL-4	9:20 AM	19.4	6.95	7.98	96	170	80	170	<1	0.07	0.7	14	<0.2	0.82	<0.02	<5	<0.5	<2	1	<2	<0.5	<2	<5	<0.2	<10	<10	<5*
Routine	>1	050509	SL-1	8:55 AM	16.7	6.82	10.91	100	500*	500*	>=16,000*	<1	0.13	1.0	13	0.6	0.77	<0.02	<5	<0.5	<2	2	<2	<0.5	<2	<5	<0.2	10	<10	<5
Routine	>1	050509	SL-2	9:05 AM	16.9	6.79	10.72	96	230*	1,100*	16,000*	<1	0.11	<0.5	10	0.2	0.90	<0.02	<5	<0.5	<2	3	<2	<0.5	<2	<5	<0.2	20	<10	<5
Routine	>1	050509	SL-3	9:14 AM	17.1	6.95	10.74	100	800*	1,400*	>=16,000*	<1	0.09	1.0	9	<0.2	0.84	<0.02	<5	<0.5	<2	3	<2	<0.5	<2	<5	<0.2	<10	<10	<5
Routine	>1	050509	SL-4	9:25 AM	17.1	6.67	10.75	110	300	340	>=16,000*	<1	0.07	0.8	8	0.3	0.79	<0.02	<5	<0.5	<2	2	<2	<0.5	<2	<5	<0.2	10	<10	<5
Routine	>1	050709	SL-1	9:30 AM	16.9	6.47	9.80	120	2,400	>=24000	4,600	<1	0.31	1.3	85	0.4	0.74	0.03	<5	<0.5	<2	2	<2	<0.5	3	<5	<0.2	<10	<10	<5
Routine	>1	050709	SL-2	9:35 AM	16.9	6.46	9.44	72	11,000	>=24000	930	<1	0.29	1.8	81	0.6	0.63	0.03	<5	<0.5	<2	2	<2	<0.5	<2	<5	<0.2	20	<10	<5
Routine	>1	050709	SL-3	9:45 AM	16.9	6.49	9.37	68	4,600	>=24000	11,000	<1	0.40	1.6	110	0.7	0.12	0.02	<5	<0.5	<2	2	<2	<0.5	<2	<5	<0.2	<10	<10	<5
Routine	>1	050709	SL-4	9:55 AM	17.1	6.58	8.30	80	4,600	>=24000	4,600	3	0.23	1.3	69	<0.2	0.69	0.02	<5	<0.5	<2	2	<2	<0.5	<2	<5	<0.2	<10	<10	<5
Routine	>1	051109	SL-1	9:32 AM	17.7	6.65	9.08	88	93	93	4,600	<1	0.10	1.3	10	<0.2	0.96	<0.02	<5	<0.5	<2	1	<2	<0.5	<2	<5	<0.2	<10	<10	<5
Routine	>1	051109	SL-2	9:42 AM	17.7	6.70	10.05	120	93	93	4,600	<1	0.07	1.0	11	0.3	0.96	<0.02	<5	<0.5	<2	1	<2	<0.5	<2	<5	<0.2	<10	<10	<5
Routine	>1	051109	SL-3	9:50 AM	17.7	6.47	9.38	130	43	93	4,600	<1	0.07	0.7	12	<0.2	0.98	<0.02	<5	<0.5	<2	<1	<2	<0.5	<2	<5	<0.2	<10	<10	5.4
Routine	>1	051109	SL-4	9:57 AM	17.5	6.60	9.04	84	93	93	11,000	<1	0.08	1.3	14	0.2	0.95	<0.02	<5	<0.5	<2	<1	<2	<0.5	<2	<5	<0.2	<10	<10	<5
Routine	>1	051409	SL-1	9:35 AM	18.1	6.46	8.72	96	43	93	210	<1	0.07	1.3	13	<0.2	1.10	0.03	<5	<0.5	<2	<1	<2	<0.5	2	<5	<0.2	30	<10	6
Routine	>1	051409	SL-2	9:45 AM	18.1	7.02	8.91	100	23	21	230	<1	0.06	1.0	12	<0.2	1.10	0.03	<5	<0.5	<2	<1	<2	<0.5	2	<5	<0.2	<10	<10	6
Routine	>1	051409	SL-3	9:50 AM	18.1	7.06	8.77	96	23	23	4,600	<1	0.08	1.0	12	<0.2	1.10	0.02	<5	<0.5	<2	<1	<2	<0.5	2	<5	<0.2	<10	<10	7*
Routine	>1	051409	SL-4	10:00 AM	18.2	7.47	8.67	88	43	43	600	<1	0.06	1.3	12	<0.2	1.10	0.02	<5	<0.5	<2	<1	<2	<0.5	2	<5	<0.2	<10	<10	7
Routine	>1	052109	SL-1	8:57 AM	22.1	6.58	8.23	120	23	15	23	<1	0.09	1.3	17	0.4	1.20	0.02	<5	<0.5	<2	3	<2	<0.5	<2	<5	<0.2	<10	<10	5
Routine	>1	052109	SL-2	9:06 AM	22.1	6.85	8.09	110	43	39	240	<1	0.09	1.0	20	0.5	1.20	0.02	<5	<0.5	<2	<1	<2	<0.5	<2	<5	<0.2	<10	<10	6
Routine	>1	052109	SL-3	9:17 AM	22.1	6.60	7.40	120	23	9	150	<1	0.09	1.0	16	0.4	1.30	0.02	<5	<0.5	<2	3	<2	<0.5	<2	<5	<0.2	<10	<10	8
Routine	>1	052109	SL-4	9:24 AM	21.7	7.03	8.44	120	23	43	240	<1	0.08	1.3	6	0.4	1.30	0.02	<5	<0.5	<2	<1	<2	<0.5	<2	<5	<0.2	<10	<10	<5*
CSO	1	061909	SL-1-1	8:30 AM	24.0	6.37	5.86		11,000	4,600	>=24,000																			
CSO	1	061909	SL-1-2	9:50 AM	24.8	5.58	6.45		4,600	2,400	>=24,000																			
CSO	1	061909	SL-1-3	11:00 AM	24.9	6.04	6.31		11,000	4,600	11,000																			
CSO	1	061909	SL-2-1	8:38 AM	24.0	6.07	6.30		4,600	2,400	>=24,000																			
CSO	1	061909	SL-2-2	9:54 AM	24.6	5.60	6.30		4,600	4,600	>=24,000																			
CSO	1	061909	SL-2-3	11:06 AM	24.5	5.97	5.99		11,000	>=24,000	>=24,000																			
CSO	1	061909	SL-3-1	8:45 AM	24.2	5.83	6.52	96	930	2,400	>=24,000	<5	0.09	1.0	21	0.4	0.98	<0.02	<5	<0.5	<2	2	<2	<0.5	3	<5	<0.2	20	<10	<5
CSO	1	061909	SL-3-2	9:58 AM	24.6	6.32	6.40	86	2,400	4,600	>=24,000	<5	0.13	1.3	36	<0.2	0.91	<0.02	<5	<0.5	<2	2	<2	<0.5	<2	<5	<0.2	30	<10	6
CSO	1	061909	SL-3-3	11:12 AM	25.0	6.15	6.00	90	>=24,000	4,600	>=24,000	<5	0.11	0.7	27	0.2	0.93	<0.02	<5	<0.5	<2	<1	<2	<0.5	<2	<5	<0.2	30	<10	41
CSO	1	061909	SL-4-1	8:58 AM	23.7	5.80	6.15		4,600	1,500	>=24,000																			
CSO	1	061909	SL-4-2	10:10 AM	24.4	6.25	5.63		11,000*	2,400*	>=24,000*																			
CSO	1	061909	SL-4-3	11:21 AM	25.1	5.89	6.36		2,400	2,400	>=24,000																			
Routine	>1	080409	SL-1	9:23 AM					43[1]	43[1]	>=24,000[1]																			5[1]
Routine	>1	080409	SL-2	9:26 AM					43[1]	93[1]	2,100[1]																			<5[1]
Routine	>1	080409	SL-3	9:29 AM					93[1]	75[1]	>=24,000[1]																			6[1]
Routine	>1	080409	SL-4	9:31 AM					150[1]	93[1]	2,400[1]																			5[1]
Routine	>1	080609	SL-1	8:12 AM					43[1]	120[1]	460[1]																			5[1]
Routine	>1	080609	SL-2	8:15 AM					210[1]	93[1]	>=24,000[1]																			7[1]
Routine	>1	080609	SL-3	8:18 AM					75[1]	93[1]	11,000[1]																			<5[1]
Routine	>1	080609	SL-4	8:21 AM					120[1]	930[1]	4,600[1]																			6[1]
Routine	>1	081009	SL-1	8:35 AM					150[1]	4,300[1]	11,000[1]																			5[1]
Routine	>1	081009	SL-2	8:40 AM					23[1]	23[1]	4,600[1]																			5[1]
Routine	>1	081009	SL-3	8:43 AM					93[1]	120[1]	>=2,400[1]																			5[1]
Routine	>1	081009	SL-4	8:46 AM					43[1]	150[1]	4,600[1]																			5[1]
CSO	1	111409	SL-3-1	9:30 AM																										<5[1]
CSO	1	111409	SL-3-2	10:30 AM																										<5[1]
CSO	1	111409	SL-3-3	11:30 AM																										<5[1]

Note:
Sampling analytical testing conducted by Martel Laboratories, Inc.
SL= Sample Location -Refer To Figure 4.
1= CSO within 24 Hours
>1 = No CSO within last 24 Hours
CSO event samples collected within 24 hours of CSO activation
* = Holding time has been exceeded, additional follow up samples were collected.
[1] = Follow-up sample

APPENDIX C: ORONOCO BAY SAMPLING RESULTS

Routine or CSO event	Last CSO Event (days)	Sample ID: Date (mmddyy)	Sample ID: SL	Field Data: Measurments Taken From Sampling Container in Field: Time	Temp (°C)	pH	DO - mg/L	Hardness: SM 2340 C mg/L CaCO3	Laboratory Data (container numbers listed below): MPN/100 mL: SM 9221E Fecal C.	SM 9223B E. Coli	SM 9221B Total Coliform	mg/L: SM 5210B CBOD5	mg/L P or N: EPA 365.1 TP	EPA 351.2 TKN	mg/L: SM 2540D TSS	mg/L N: SM 4500NH3-G NH_3-N	EPA 353.2 NO_3-N	mg/L N: EPA 353.2 NO_2-N	SM 4500N03-H NO_3-NO_2-N	µg/L: EPA 200.8 Antimony	EPA 200.8 Cadmium	EPA 200.8 Cr III	EPA 200.8 Copper	EPA 200.8 Lead	EPA 245.1 Mercury	EPA 200.8 Nickel	EPA 200.8 Selenium	EPA 200.8 Silver	EPA 200.8 Zinc	µg/L: SM 3500 CR D Cr VI	mg/L: EPA 1664A Oil/Grease
Routine	>1	041210	SL-1-1	10:19 AM	18.3	8.01	13.91	150	23	23	930	<5	0.06	0.8	19	<0.2	1.1	<0.02	1.1	<5	<0.5	<2	<1	<2	<0.5	<2	<5	<0.2	20	<10	<5
Routine	>1	041210	SL-2-1	10:35 AM	18.2	8.08	13.88	130	150	150	930	<5	0.05	0.8	2	<0.2	1.1	<0.02	1.1	<5	<0.5	<2	1	<2	<0.5	<2	<5	<0.2	20	<10	<5
Routine	>1	041210	SL-3-1	10:45 AM	18.3	8.10	14.51	140	93	21	430	<5	0.07	1.2	20	<0.2	1.1	<0.02	1.1	<5	<0.5	<2	1	<2	<0.5	<2	<5	<0.2	20	<10	<5
Routine	>1	041210	SL-4-1	10:56 AM	18.3	8.16	14.79	130	93	93	2100	<5	0.06	0.7	18	<0.2	1.1	<0.02	1.1	<5	<0.5	<2	1	<2	<0.5	<2	<5	<0.2	20	<10	<5
Routine	>1	041510	SL-1-1	10:25 AM	17.7	8.24	10.98	200	21	21	75	<5	0.05	0.9	10	<0.2	0.70	<0.02	0.7	<5	<0.5	<2	<1	<2	<0.5	<2	<5	<0.2	20	<10	<5
Routine	>1	041510	SL-2-1	10:35 AM	17.6	8.47	10.75	160	15	43	430	<5	0.05	0.8	10	<0.2	0.74	<0.02	0.74	<5	<0.5	<2	<1	<2	<0.5	<2	<5	<0.2	20	<10	<5
Routine	>1	041510	SL-3-1	10:45 AM	17.8	8.39	10.78	180	75	39	75	<5	0.05	0.9	10	<0.2	0.82	<0.02	0.82	<5	<0.5	<2	<1	<2	<0.5	<2	<5	<0.2	20	<10	<5
Routine	>1	041510	SL-4-1	10:55 AM	17.9	8.42	10.45	170	2400	2400	2400	<5	0.05	0.8	10	<0.2	0.73	<0.02	0.73	<5	<0.5	<2	<1	<2	<0.5	<2	<5	<0.2	20	<10	8
Routine	>1	041910	SL-1-1	9:55 AM	16.8	8.35	9.64	200	43	230	43	2	0.05	1.0	9	<0.2	1.0	<0.02	1	<5	<0.5	<2	<1	<2	<0.5	<2	<5	<0.2	20	<10	<5
Routine	>1	041910	SL-2-1	10:05 AM	16.7	8.26	9.61	160	930	930	930	<1	0.04	0.7	7	<0.2	1.1	<0.02	1.1	<5	<0.5	<2	<1	<2	<0.5	<2	<5	<0.2	30	<10	<5
Routine	>1	041910	SL-3-1	10:15 AM	16.9	8.31	9.73	140	75	11	930	<1	0.05	0.7	6	<0.2	1.1	<0.02	1.1	<5	<0.5	<2	<1	<2	<0.5	<2	<5	<0.2	20	<10	<5
Routine	>1	041910	SL-4-1	10:27 AM	16.8	8.40	9.96	150	43	43	930	<1	0.03	0.8	7	<0.2	1.1	<0.02	1.1	<5	<0.5	<2	<1	<2	<0.5	<2	<5	<0.2	20	<10	<5
Routine	>1	042210	SL-1-1	10:20 AM	16.4	6.57	10.02	170	210	930	2400	<1	0.06	0.9	9	<0.2	1.8	<0.02	1.8	<5	<0.5	<2	1	<2	<0.5	<2	<5	<0.2	20	<10	<5
Routine	>1	042210	SL-2-1	10:30 AM	16.2	7.53	8.20	160	11	230	2400	<1	0.05	<0.5	10	<0.2	1.7	<0.02	1.7	<5	<0.5	<2	1	<2	<0.5	<2	<5	<0.2	30	<10	<5
Routine	>1	042210	SL-3-1	10:40 AM	16.4	7.50	9.81	180	39	75	1500	<1	0.06	0.8	6	<0.2	1.2	<0.02	1.2	<5	<0.5	<2	<1	<2	<0.5	<2	<5	<0.2	20	<10	<5
Routine	>1	042210	SL-4-1	10:55 AM	16.6	7.85	8.31	190	9	23	930	<1	0.04	0.8	6	<0.2	1.2	<0.02	1.2	<5	<0.5	<2	<1	<2	<0.5	<2	<5	<0.2	20	<10	<5
Routine	>1	042610	SL-1-1	10:00 AM	18.1	8.19	8.21	170	43	43	430	<1	0.05	0.7	15	<0.2	1.2	<0.02	1.2	<5	<0.5	<2	1	<2	<0.5	<2	<5	<0.2	20	<10	<5
Routine	>1	042610	SL-2-1	10:07 AM	18.1	7.56	8.39	130	43	43	750	<1	0.04	0.6	14	<0.2	1.3	<0.02	1.3	<5	<0.5	<2	1	<2	<0.5	<2	<5	<0.2	20	<10	<5
Routine	>1	042610	SL-3-1	10:15 AM	18.1	7.50	8.21	140	70	70	1500	<1	0.06	1.0	13	<0.2	1.2	<0.02	1.2	<5	<0.5	<2	1	<2	<0.5	<2	<5	<0.2	18.7	<10	<5
Routine	>1	042610	SL-4-1	10:22 AM	18.0	7.32	8.84	150	210	210	2100	<1	0.06	0.8	14	<0.2	1.2	<0.02	1.2	<5	<0.5	<2	1	<2	<0.5	<2	<5	<0.2	20	<10	<5
Routine	>1	042910	SL-1-1	10:10 AM	16.0	7.83	10.42	390	150	150	430	2	0.03	0.6	8	<0.2	0.87	<0.02	0.87	<5	<0.5	<2	1	<2	<0.5	<2	<5	<0.2	20	<10	<5
Routine	>1	042910	SL-2-1	10:20 AM	16.0	7.53	10.26	330	75	75	2400	2	0.03	<0.5	4	<0.2	0.87	<0.02	0.87	<5	<0.5	<2	<1	<2	<0.5	<2	<5	<0.2	20	<10	<5
Routine	>1	042910	SL-3-1	10:30 AM	15.9	7.52	10.16	330	430	430	930	2	0.03	0.7	16	<0.2	0.90	<0.02	0.9	<5	<0.5	<2	1	<2	<0.5	<2	<5	<0.2	20	<10	<5
Routine	>1	042910	SL-4-1	10:40 AM	15.9	7.17	10.22	350	930	930	2400	2	0.03	0.9	8	<0.2	0.89	<0.02	0.89	<5	<0.5	<2	1	<2	<0.5	<2	<5	<0.2	20	<10	<5
Routine	>1	050610	SL-1-1	9:42 AM	23.7	7.36	8.98	300	210	930	2400	2	0.07	1.1	16	<0.2	0.96	<0.02	0.96	<5	<0.5	<2	1	<2	<0.5	<2	<5	<0.2	<10	<10	<5
Routine	>1	050610	SL-2-1	9:53 AM	23.4	7.70	10.86	390	23	43	2400	1	0.04	0.8	11	<0.2	1	<0.02	1	<5	<0.5	<2	1	<2	<0.5	<2	<5	<0.2	<10	<10	<5
Routine	>1	050610	SL-2-1	10:02 AM	23.4	7.78	9.09	280	430	430	2400	2	0.04	1.1	10	<0.2	1.1	<0.02	1.1	<5	<0.5	<2	1	<2	<0.5	<2	<5	<0.2	<10	<10	<5
Routine	>1	050610	SL-4-1	10:10 AM	23.4	7.82	8.91	290	150	150	4600	2	0.05	0.7	12	<0.2	1.1	<0.02	1.1	<5	<0.5	<2	1	<2	<0.5	<2	<5	<0.2	<10	<10	<5
Routine	>1	051010	SL-1-1	10:35 AM	18.9	7.33	12.17	260	75	75	930	2	0.08	1.2	30	<0.2	0.62	<0.02	0.62	<5	<0.5	<2	2	<2	<0.5	<2	<5	<0.2	10	<10	<5
Routine	>1	051010	SL-2-1	10:45 AM	18.6	7.02	11.11	180	430	430	430	2	0.07	1.6	25	<0.2	0.63	<0.02	0.63	<5	<0.5	<2	2	<2	<0.5	<2	<5	<0.2	20	<10	<5
Routine	>1	051010	SL-3-1	10:55 AM	18.2	7.18	11.35	170	75	75	930	2	0.08	1.1	22	<0.2	0.65	<0.02	0.65	<5	<0.5	<2	1	<2	<0.5	<2	<5	<0.2	10	<10	<5
Routine	>1	051010	SL-4-1	11:11 AM	18.6	7.43	11.64	160	23	23	2400	<1	0.09	1.1	25	<0.2	0.72	<0.02	0.72	<5	<0.5	<2	1	<2	<0.5	<2	<5	<0.2	10	<10	<5
CSO	<1	051210	SL-1-1	9:20 AM	18.4	6.79	13.20		93*	93*	230*																				
CSO	<1	051210	SL-2-1	9:25 AM	18.4	7.16	13.36		43*	43*	4600*																				
CSO	<1	051210	SL-3-1	9:30 AM	18.3	7.30	13.58	310	43*	43*	930*	3	0.04	1.7	11	<0.2	0.64	<0.02	0.64	<5	<0.5	<2	2	<2	<0.5	<2	<5	<0.2	<10	<10	<5
CSO	<1	051210	SL-4-1	9:40 AM	18.7	7.36	12.96		23*	23*	930*																				
CSO	<1	051210	SL-1-2	10:25 AM	18.9	7.49	13.85		21*	21*	2400*																				
CSO	<1	051210	SL-2-2	10:35 AM	18.7	7.45	13.01		23*	23*	2400*																				
CSO	<1	051210	SL-3-2	10:40 AM	18.7	7.25	13.72	200	43*	43*	2400*	4	0.02	1.5	10	<0.2	0.62	<0.02	0.62	<5	<0.5	<2	1	<2	<0.5	<2	<5	<0.2	<10	<10	<5
CSO	<1	051210	SL-4-2	10:50 AM	19.0	7.22	13.99		230*	230*	1500*																				
CSO	<1	051210	SL-1-3	11:35 AM	19.7	7.49	12.15		43	43	430																				
CSO	<1	051210	SL-2-3	11:45 AM	19.9	7.07	13.04		200	200	4600																				
CSO	<1	051210	SL-3-3	11:51 AM	19.3	7.31	14.16	230	210	210	2400	2	0.05	1.3	10	<0.2	0.62	<0.02	0.62	<5	<0.5	<2	1	<2	<0.5	<2	<5	<0.2	<10	<10	<5
CSO	<1	051210	SL-4-3	12:00 PM	19.9	7.65	13.35		430	430	43																				
CSO	<1	073010	SL-1-1	9:50 AM	29.4	6.15	5.8		210	210	2400																				
CSO	<1	073010	SL-2-1	9:55 AM	30	6.25	5.29		24	24	11000																				
CSO	<1	073010	SL-3-1	10:00 AM	29.7	6.13	6.09	160	930	930	2400	<1	0.11	1	29	<0.2	0.12	<0.02	0.12	<5	<0.5	<2	2	<2	<0.5	<2	<5	<0.2	10	<10	<5
CSO	<1	073010	SL-4-1	10:15 AM	28.3	5.65	6.9		28	150	150																				
CSO	<1	073010	SL-1-2	11:15 AM	29.7	5.9	5.33		210	210	2400																				
CSO	<1	073010	SL-2-2	11:20 AM	30.1	6.32	5.15		93	93	150																				
CSO	<1	073010	SL-3-2	11:25 AM	29.8	6.3	5.17	180	230	230	230	<1	0.09	1	12	<0.2	0.14	<0.02	0.14	<5	<0.5	<2	2	<2	<0.5	<2	<5	<0.2	20	<10	<5
CSO	<1	073010	SL-4-2	11:30 AM	29.8	6.09	5.12		430	430	4600																				
CSO	<1	073010	SL-1-3	12:15 PM	30.3	6.2	5.31		2400	2400	11000																				
CSO	<1	073010	SL-2-3	12:20 PM	29.9	6.27	6.35		210	210	1500																				
CSO	<1	073010	SL-3-3	12:25 PM	30.1	6.1	6.61	110	210	210	4600	<1	0.09	0.7	16	<0.2	0.13	<0.02	0.13	<5	<0.5	<2	2	<2	<0.5	2	<5	<0.2	20	<10	<5
CSO	<1	073010	SL-4-3	12:30 PM	30.3	5.9	6.29		210	210	430																				
CSO	<1	080610	SL-1-1	11:00 AM	-	-	-		2400[1]	2400[1]	11000[1]																				
CSO	<1	080610	SL-2-1	11:02 AM	-	-	-		11000[1]	11000[1]	>=24000																				
CSO	<1	080610	SL-3-1	11:04 AM	-	-	-		430[1]	430[1]	4600[1]																				
CSO	<1	080610	SL-4-1	11:06 AM	-	-	-		4600[1]	4600[1]	4600[1]																				
CSO	<1	080610	SL-1-2	11:50 AM	-	-	-		4600[1]	4600[1]	4600[1]																				
CSO	<1	080610	SL-2-2	11:52 AM	-	-	-		930[1]	930[1]	4600[1]																				
CSO	<1	080610	SL-3-2	11:54 AM	-	-	-		2400[1]	2400[1]	2400[1]																				
CSO	<1	080610	SL-4-2	11:56 AM	-	-	-		4600[1]	4600[1]	11000[1]																				
CSO	<1	080610	SL-1-3	12:20 PM	-	-	-		930[1]	930[1]	2400																				
CSO	<1	080610	SL-2-3	12:22 PM	-	-	-		930[1]	930[1]	930[1]																				
CSO	<1	080610	SL-3-3	12:24 PM	-	-	-		2400[1]	2400[1]	2400[1]																				
CSO	<1	080610	SL-4-3	12:26 PM	-	-	-		750[1]	430[1]	11000[1]																				

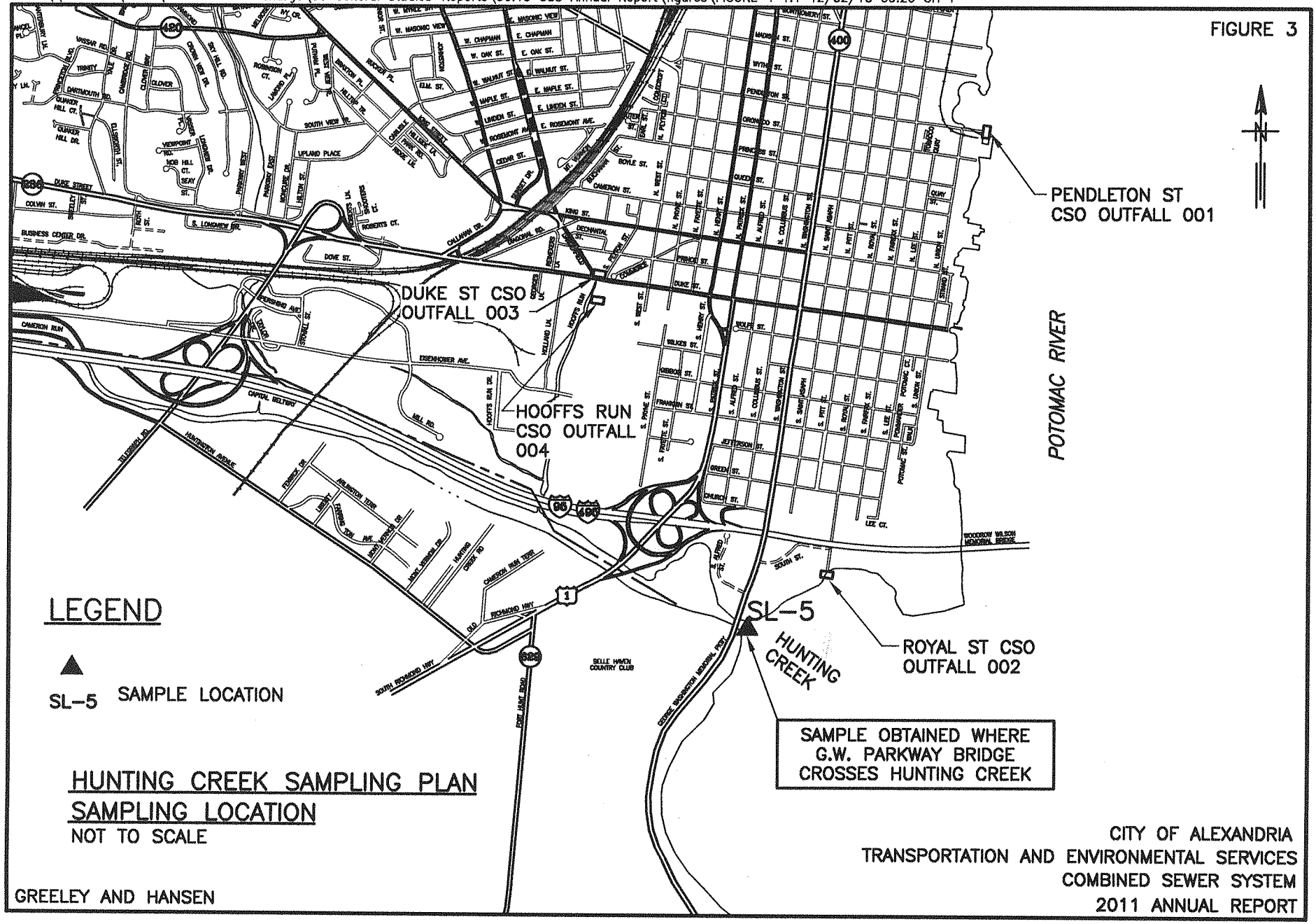
Note:
Sampling analytical testing conducted by Martel Laboratories, Inc.
SL= Sample Location -Refer To Figure 4.
1= CSO within 24 Hours
>1 = No CSO within last 24 Hours
CSO event samples collected within 24 hours of CSO activation
* = Holding time has been exceeded, additional follow up samples were collected.
[1] = Follow-up sample

APPENDIX B: ORONOCO BAY SAMPLING RESULTS

Routine or CSO event	Last CSO Event	Sample ID Date (mmddyy)	SL SL1-SL4	Field Data Measurments Taken From Sampling Container in Field Time	Temp (°C)	pH	DO - mg/L	Hardness SM 2340 C mg/L CaCO3	Laboratory Data (container numbers listed below) MPN/100 mL SM 9221E Fecal C.	SM 9223B E. Coli	SM 9221B Total Coliform	mg/L SM 5210B CBOD5	mg/L P or N EPA 365.1 TP	EPA 351.2 TKN	mg/L SM 2540D TSS	mg/L N SM 4500NH3-G NH_3-N	EPA 353.2 NO_2-N	mg/L N SM 4500N03-H NO_3,NO_2-N	µg/L EPA 200.8 Antimony	EPA 200.8 Cadmium	EPA 200.8 Cr III	EPA 200.8 Copper	EPA 200.8 Lead	EPA 245.1 Mercury	EPA 200.8 Nickel	EPA 200.8 Selenium	EPA 200.8 Silver	EPA 200.8 Zinc	µg/L SM 3500 CR D Cr VI	mg/L EPA 1664A Oil/Grease
Routine	>24 hrs	063011	SL-1-1	9:40 AM	26.9	6.66	6.48	150	17	14	500	2	0.1	1.1	14	<0.2	0.97	0.03	1	<5	<0.5	<2	1	<2	<0.5	<2	<5	<0.2	<10	<10	<5
Routine	>24 hrs	063011	SL-2-1	9:50 AM	26.9	6.96	6.51	150	22	17	800	2	0.11	0.8	12	0.3	0.97	0.03	1	<5	<0.5	<2	1	<2	<0.5	<2	<5	<0.2	<10	<10	6
Routine	>24 hrs	063011	SL-3-1	10:00 AM	27.0	6.75	6.58	150	40	<2	800	1	0.15	1.1	10	<0.2	0.98	0.02	1	<5	<0.5	<2	<1	<2	<0.5	<2	<5	<0.2	<10	<10	<5
Routine	>24 hrs	063011	SL-4-1	10:05 AM	27.0	6.75	6.38	150	80	<2	500	1	0.12	0.8	13	<0.2	0.98	0.02	1	<5	<0.5	<2	<1	<2	<0.5	<2	<5	<0.2	<10	<2	<5
Routine	>24 hrs	070711	SL-1-1	9:40 AM	28.6	6.78	6.23	120	240	240	300	<1	0.16	1.7	13	0.2	1.10	0.03	1.1	<5	<0.5	<2	1	<2	<0.5	<2	<5	<0.2	<10	<10	<5
Routine	>24 hrs	070711	SL-2-1	9:50 AM	28.7	6.98	6.54	130	30	23	900	3	0.15	1.6	11	0.4	1.2	0.03	1.2	<5	<0.5	<2	1	<2	<0.5	<2	<5	<0.2	<10	<10	<5
Routine	>24 hrs	070711	SL-3-1	10:05 AM	28.8	6.93	6.70	130	80	50	2200	3	0.20	1.3	19	0.4	1.1	0.03	1.1	<5	<0.5	<2	2	<2	<0.5	<2	<5	<0.2	<10	<10	<5
Routine	>24 hrs	070711	SL-4-1	10:20 AM	28.8	6.98	6.34	120	30	23	300	2	0.03	1.1	19	<0.2	1.1	0.03	1.1	<5	<0.5	<2	2	<2	<0.5	<2	<5	<0.2	<10	<10	<5
Routine	>24 hrs	071111	SL-1-1	10:10 AM	30.1	7.35	7.63	170	90	90	280	3	0.18	1.6	16	0.4	0.8	0.02	0.79	<5	<0.5	<2	3	<2	<0.5	<2	<5	<0.2	10	<10	<5
Routine	>24 hrs	071111	SL-2-1	10:23 AM	30.1	7.48	7.48	88	50	50	1600	3	0.2	1.2	16	0.5	0.84	0.02	0.86	<5	<0.5	<2	3	<2	<0.5	<2	<5	<0.2	30	<2	<5
Routine	>24 hrs	071111	SL-3-1	10:37 AM	30.0	7.61	7.78	170	23	23	300	3	14	1.2	14	0.5	0.87	0.02	0.89	<5	<0.5	<2	3	<2	<0.5	<2	<5	<0.2	20	<10	<5
Routine	>24 hrs	071111	SL-4-1	10:48 AM	30.1	7.68	7.50	89	130	50	1600	<1	0.23	1.2	15	0.3	0.79	0.02	0.81	<5	<0.5	<2	3	<2	<0.5	<2	<5	<0.2	20	<10	<5
CSO	<24 hrs	071411	SL-1-1	9:46 AM	28.7	6.75	6.66		930	430	4300																				
CSO	<24 hrs	071411	SL-2-1	9:55 AM	28.6	7.21	6.76		930	430	4300																				
CSO	<24 hrs	071411	SL-3-1	10:05 AM	28.9	6.69	6.20	120	930	430	4300	<5	0.28	1.6	20	0.4	0.79	<0.02	0.79	<5	<0.5	<2	2	<2	<0.5	<2	<5	<0.2	30	<10	<5
CSO	<24 hrs	071411	SL-4-1	10:15 AM	27.4	7.03	6.98		930	930	24000																				
CSO	<24 hrs	071411	SL-1-2	11:12 AM	29.3	MP	7.14		750	750	4300																				
CSO	<24 hrs	071411	SL-2-2	11:19 AM	28.9	MP	7.35		2300	930	7500																				
CSO	<24 hrs	071411	SL-3-2	11:24 AM	29.2	6.42	7.44	110	430	430	46000	<5	0.32	1.3	25	0.3	0.81	<0.02	0.81	<5	<0.5	<2	2	<2	<0.5	<2	<5	<0.2	20	<10	<5
CSO	<24 hrs	071411	SL-4-2	11:33 AM	29.3	MP	7.38		2300	930	24000																				
CSO	<24 hrs	071411	SL-1-3	12:23 PM	28.9	6.71	6.62		930	930	46000																				
CSO	<24 hrs	071411	SL-2-3	12:30 PM	28.8	6.72	6.69		430	430	2300																				
CSO	<24 hrs	071411	SL-3-3	12:34 PM	29.1	6.08	7.08	110	430	230	2100	<5	0.15	1.3	25	0.4	0.8	<0.02	0.8	<5	<0.5	<2	2	<2	<0.5	<2	<5	<0.2	20	<10	<5
CSO	<24 hrs	071411	SL-4-3	12:40 PM	29.2	6.28	7.06		230	230	4300																				
Routine	>24 hrs	071811	SL-1-1	9:35 AM	28.2	6.58	7.21	170	170	17	500	<1	0.17	1.2	16	<0.2	0.68	0.18	0.86	<5	<0.5	<2	2	<2	<0.5	<2	<5	<0.2	<10	<10	<5
Routine	>24 hrs	071811	SL-2-1	9:48 AM	28.1	6.58	7.18	92	25	22	220	<1	0.17	1	17	0.3	0.82	0.03	0.85	<5	<0.5	<2	1	<2	<0.5	<2	<5	<0.2	<10	<10	<5
Routine	>24 hrs	071811	SL-3-1	10:00 AM	28.3	7.60	7.36	100	50	50	280	<1	0.14	0.9	21	<0.2	0.97	0.03	1	<5	<0.5	<2	1	<2	<0.5	<2	<5	<0.2	<10	<10	<5
Routine	>24 hrs	071811	SL-4-1	10:11 AM	28.5	5.48	7.65	130	80	50	700	<1	0.1	0.8	17	<0.2	0.62		0.65	<5	1.1	<2	2	<2	<0.5	<2	<5	<0.2	<10	<10	<5
Routine	>24 hrs	072111	SL-1-1	8:33 AM	30.6	7.53	6.98	130	30	30	1100	3	0.1	1.6	20	0.4	0.29	0.03	0.32	<5	<0.5	<2	2	<2	<0.5	<2	<5	<0.2	<10	<10	8
Routine	>24 hrs	072111	SL-2-1	8:45 AM	30.6	7.35	6.45	130	260	170	1100	3	0.11	0.7	19	0.3	0.07	0.02	0.09	<5	<0.5	<2	2	<2	<0.5	<2	<5	<0.2	<10	<10	<5
Routine	>24 hrs	072111	SL-3-1	8:56 AM	30.6	7.44	6.60	130	140	13	800	3	0.1	1.3	18	0.3	0.16	0.02	0.18	<5	<0.5	<2	1	<2	<0.5	<2	<5	<0.2	<10	<10	<5
Routine	>24 hrs	072111	SL-4-1	9:05 AM	30.7	7.98	7.07	130	80	80	2400	3	0.09	1.3	21	<0.2	0.43	0.02	0.45	<5	<0.5	<2	1	<2	<0.5	<2	<5	<0.2	<10	<10	<5
Routine	>24 hrs	072511	SL-1-1	9:11 AM	32.6	7.21	6.65	140	21	17	140	2	0.12	1.7	15	<0.2	0.53	0.03	0.56	<5	<0.5	<2	3	<2	<0.5	<2	<5	<0.2	<10	<10	<5
Routine	>24 hrs	072511	SL-2-1	9:24 AM	32.9	7.21	6.32	140	80	80	210	2	0.16	1.1	17	<0.2	0.6	0.02	0.62	<5	<0.5	<2	3	<2	<0.5	<2	<5	<0.2	<10	<10	<5
Routine	>24 hrs	072511	SL-3-1	9:33 AM	32.8	8.05	6.34	140	80	80	130	3	0.14	1.0	20	<0.2	0.65	0.02	0.67	<5	<0.5	<2	3	<2	<0.5	<2	<5	<0.2	<10	<10	<5
Routine	>24 hrs	072511	SL-4-1	9:45 AM	32.8	7.80	6.80	130	300	300	500	3	0.15	1	19	0.3	0.69	0.02	0.71	<5	<0.5	<2	3	<2	<0.5	<2	<5	<0.2	<10	<10	<5
Routine	>24 hrs	072811	SL-1-1	9:10 AM	31.6	7.69	MP	130	80	27	500	3	0.12	1.4	18	0.3	0.69	0.03	0.72	<5	<0.5	<2	3	<2	<0.5	<2	<5	<0.2	<10	<10	<5
Routine	>24 hrs	072811	SL-2-1	9:22 AM	31.4	7.65	7.64	140	17	7	220	<1	0.13	0.8	20	<0.2	1.1	<0.02	1.1	<5	<0.5	<2	3	<2	<0.5	<2	<5	<0.2	20	<10	<5
Routine	>24 hrs	072811	SL-3-1	9:33 AM	31.4	7.1	MP	160	70	76	300	<1	0.11	1.1	23	0.3	0.65	<0.02	0.65	<5	<0.5	<2	2	<2	<0.5	<2	<5	<0.2	<10	<10	<5
Routine	>24 hrs	072811	SL-4-1	9:44 AM	31.4	7.23	6.62	120	170	170	300	2	0.12	0.8	19	<0.2	0.62	0.02	0.64	<5	<0.5	<2	2	<2	<0.5	<2	<5	<0.2	<10	<10	<5
Routine	>24 hrs	080111	SL-1-1	9:45 AM	31.8	6.89	7.22	150	70	70	300	8	0.12	1.6	14	<0.2	1.1	0.03	1.1	<5	<0.5	<2	2	<2	<0.5	<2	<5	<0.2	<10	<10	<5
Routine	>24 hrs	080111	SL-2-1	9:56 AM	31.8	7.25	7.69	140	40	40	400	<5	0.13	1.1	14	<0.2	1.1	0.02	1.1	<5	<0.5	<2	2	<2	<0.5	<2	<5	<0.2	<10	<10	<5
Routine	>24 hrs	080111	SL-3-1	10:06 AM	31.6	7.44	7.24	140	80	22	800	2	0.16	1.1	14	<0.2	1.1	0.02	1.1	<5	>0.5	<2	1	<2	<0.5	<2	<5	<0.2	<10	<10	<5
Routine	>24 hrs	080111	SL-4-1	10:26 AM	31.8	7.14	7.40	140	30	30	110	<5	0.14	1.1	15	0.3	1.1	0.02	1.1	<5	<0.5	<2	2	<2	<0.5	<2	<5	<0.2	<10	<10	<5
CSO	<24 hrs	081511	SL-1-1	8:58 AM	27.2	7.02	8.00		300	130	1300																				
CSO	<24 hrs	081511	SL-2-1	9:05 AM	27.2	6.68	7.54		300	300	1300																				
CSO	<24 hrs	081511	SL-3-1	9:10 AM	27.3	7.34	6.90	140	500	110	1700	<1	0.15	0.8	19	<0.2	0.15	<0.02	0.15	<5	<0.5	<2	1	<2	<0.5	<2	<5	<0.2	<10	<10	<5
CSO	<24 hrs	081511	SL-4-1	9:33 AM	37.3	6.82	7.76		230	80	1700																				
CSO	<24 hrs	081511	SL-1-2	11:02 AM	27.8	6.92	7.86		170	110	1100																				
CSO	<24 hrs	081511	SL-2-2	11:07 AM	27.9	6.87	8.12		170	170	2400																				
CSO	<24 hrs	081511	SL-3-2	11:13 AM	27.9	6.86	8.45	130	220	140	2400	3	0.15	0.8	20	0.3	0.8	<0.02	0.8	<5	<0.5	<2	1	<2	<0.5	<2	<5	<0.2	10	<10	<5
CSO	<24 hrs	081511	SL-4-2	11:20 AM	27.9	7.1	8.41		300	170	800																				
CSO	<24 hrs	081511	SL-1-3	12:01 PM	27.8	6.82	8.70		230	230	1300																				
CSO	<24 hrs	081511	SL-2-3	12:04 PM	27.7	6.92	8.89		300	170	1700																				
CSO	<24 hrs	081511	SL-3-3	12:07 PM	27.7	7.17	8.87	130	130	130	1300	3	0.13	0.8	25	0.3	0.07	<0.02	0.07	<5	<0.5	<2	1	<2	<0.5	<2	<5	<0.2	10	<10	<5
CSO	<24 hrs	081511	SL-4-3	12:13 PM	27.9	6.84	8.73		1300	800	8000																				

Note:
Sampling analytical testing conducted by Martel Laboratories, Inc.
SL= Sample Location -Refer To Figure 2.
<24 hrs = CSO within 24 Hours
>24 hrs = No CSO within last 24 Hours
CSO event samples collected within 24 hours of CSO activation

FILE: \\Gh-nova\ENGR\0057C -VA Discharge\06 General Studies-Reports\06.10 CSS Annual Report\figures\FIGURE 4 1:1 12/02/10 09:20 GH-F



APPENDIX B: HUNTING CREEK SAMPLING RESULTS

Routine, Routine or CSO	Last CSO Event (days)	Sample ID		Field Data					Laboratory Data																						
		Date	SL	Measurments Taken From Sampling Container				Hardness	MPN/100 mL			mg/L	mg/L P or N		mg/L	mg/L N		mg/L N	µg/L											µg/L	mg/L
		(yymmdd)	SL5	Time	Temp (°C)	pH	DO - mg/L	mg/L CaCO3	Fecal C.	E. Coli	Total Coliform	CBOD5	TP	TKN	TSS	NH_3-N	NO_3-N	NO_2-N	Antimony	Cadmium	Cr III	Copper	Lead	Mercury	Nickel	Selenium	Silver	Zinc	Cr VI	Oil/Grease
Routine	>1	070912	SL5	11:30	25.5	7.05	5.26	180	900	500	1,600	5.7	0.038	1.6	9.5	<0.10	0	0.04	<5.0	1.4	3.8	5	<2.0	<0.20	4.4	<5.0	<1.0	25	< 5	5
Routine	>1	070919	SL5	9:56	22.3	7.34	7.20	260	340	340	2,400	3.6	0.043	0.5	17	0.12	0.86	0.014	<5.0	<0.50	<2.5	3.8	<2.0	<0.20	<5.0	<5.0	<1.0	24	< 5	<5.0
Routine	>1	070926	SL5	9:29	23.5	7.57	6.10	120	16,000	16,000	16,000	<3.0	0.04	0.38	10	<0.10	2.3	0.044	<5.0	<0.50	<2.5	2.5	<2.0	<0.20	<5.0	<5.0	<1.0	<20	5.3	<5.0
Routine	>1	071003	SL5	10:00	24.1	7.48	6.68	140	1,700	1,700	5,000	<3.0	0.033	2.4	11	<0.10	4.9	0.036	< 5.0	< 0.50	< 2.5	4.9	< 2.9	< 0.20	< 5.0	< 5.0	< 1.0	< 20	<5.0	< 5.0
CSO	1	071025	SL5-1	14:45	17.2	7.10	9.03	65	16,000	3,000	16,000	<3.0	0.063	1.9	11	<0.10	1.3	0.029	<5.0	<0.50	<2.5	3.1	<2.0	<0.20	<5.0	<5.0	<1.0	<20	<5.0	<5.0
CSO	1	071025	SL5-2	16:45	16.6	4.72	8.95	75	16,000	3,000	16,000	<3.0	0.062	<0.12	20	<0.10	1.4	0.033	<5.0	<0.50	<2.5	3.2	<2.0	<0.20	<5.0	<5.0	<1.0	28	<5.0	<5.0
CSO	1	071025	SL5-3	18:10	15.9	7.2	MP	75	9,000	2,800	>16,000	<3.0	0.083	<0.13	34	<0.10	1.1	0.047	<5.0	<0.50	<2.5	3.7	<2.0	<0.20	<5.0	<5.0	<1.0	<20	<5.0	<5.0
CSO	1	080112	SL5-1	7:48	10.3	MP	MP	87	13,000	13,000	13,000	<3.0	0.055	0.95	18	0.15	2.1	0.025	<5.0	<0.50	<2.5	3.2	<2.0	<0.20	<5.0	<5.0	<1.0	<20	<5.0	<5.0
CSO	1	080112	SL5-2	9:06	9.5	MP	MP	110	17,000	17,000	17,000	<3.0	0.041	1.3	26	0.4	2.4	0.03	<5.0	<0.50	<2.5	3.2	<2.0	<0.20	<5.0	<5.0	<1.0	<20	<5.0	<5.0
CSO	1	080112	SL5-3	10:40	9.3	MP	MP	120	7,000	7,000	7,000	<3.0	0.59	1.6	23	0.31	2.3	0.031	<5.0	<0.50	2.6	3.1	<2.0	<0.20	<5.0	<5.0	<1.0	<20	<5.0	<5.0

Note:
N/A = Not Analyzed
MP = Measurement Problem
0 = CSO ongoing

APPENDIX B : HUNTING CREEK SAMPLING RESULTS

Routine or CSO event	Last CSO Event (days)	Sample ID Date (yymmdd)	Sample ID SL	Field Data Measurments Taken From Sampling Container in the Field Time	Temp (°C)	pH	DO - mg/L	Hardness SM 2340 C mg/L CaCO3	Laboratory Data MPN/100 mL SM 9221E Fecal C.	SM 9223B E. Coli	SM 9221B Total Coliform	mg/L SM 5210B CBOD5	mg/L P or N EPA 365.1 TP	EPA 351.2 TKN	mg/L SM 2540D TSS	mg/L N SM 4500NH3-G NH_3-N	EPA 353.2 NO_3-N	mg/L N EPA 353.2 NO_2-N	µg/L EPA 200.8 Antimony	EPA 200.8 Cadmium	EPA 200.8 Cr III	EPA 200.8 Copper	EPA 200.8 Lead	EPA 245.1 Mercury	EPA 200.8 Nickel	EPA 200.8 Selenium	EPA 200.8 Silver	EPA 200.8 Zinc	µg/L SM 3500 CR D Cr VI	mg/L EPA 1664A Oil/Grease
Routine	>1	042308	SL5	11:40 AM	21.4	6.38	MP	80	1,600	1,600	1,600	3.3	<0.010	1.30	15.0	<0.10	1.60	0.027	<5.0	<1.0	<10.0	2.4	<5.0	<0.20	<4.0	<5.0	0.2	<10.0	<5.0	<5.0
Routine	>1	043008	SL5	11:39 AM	20.1	6.62	8.70	72	<20,000	<20,000	<20,000	<5.0	<0.010	0.92	<10.0	<0.10	0.79	0.018	<5.0	<1.0	<10.0	3.6	<5.0	<0.20	<4.0	<5.0	<0.20	19.0	<5.0	<5.0
Routine	>1	050708	SL5	11:17 AM	30.8	6.70	7.55	81	800	800	800	<3.0	0.028	0.76	<5.0	<0.10	1.30	0.020	<5.0	<1.0	<10.0	2.1	<5.0	<0.20	<4.0	<5.0	<0.20	11.0	<5.0	<5.0
Routine	>1	051408	SL5	1:00 PM	31.1	6.59	10.0	60	8,000	8,000	8,000	4.4	0.048	0.32	11.0	0.14	1.20	0.014	<5.0	<1.0	<10.0	2.8	<5.0	<0.20	<4.0	<5.0	<0.20	<10.0	<5.0	<5.0
Routine	>1	052708	SL5	12:15 PM	24.3	6.62	15.2	74	2,200	1,700	2,200	<2.0	<0.010	0.81	6.5	0.84	1.20	0.013	<5.0	<1.0	<10.0	2.8	<5.0	<0.20	<4.0	<5.0	0.2	11.0	<5.0	<5.0
CSO event	1	042908	SL5-1	12:00 PM	17.8	6.35	9.47	63	<20,000	<20,000	20,000	3.9	<0.010	0.87	<10.0	0.10	0.04	0.024	<5.0	<1.0	<10.0	5.8	<5.0	<0.20	<4.0	<5.0	<0.20	20.0	<5.0	<5.0
CSO event	1	042908	SL5-2	1:47 PM	18.7	6.42	MP	70	<20,000	<20,000	80,000	3.9	<0.010	0.69	14.0	0.17	0.11	0.027	<5.0	<1.0	<10.0	4.8	<5.0	<0.20	<4.0	<5.0	<0.20	20.0	<5.0	<5.0
CSO event	1	042908	SL5-3	2:51 PM	19.8	6.49	MP	65	<20,000	<20,000	80,000	3.9	<0.010	0.91	10.0	0.17	0.04	0.025	<5.0	<1.0	<10.0	5.0	<5.0	<0.20	<4.0	<5.0	<0.20	20.0	<5.0	<5.0
CSO event	1	052008	SL5-1	11:44 AM	15.2	6.71	12.95	27	>1,600	>1,600	>1,600	<3.0	0.019	0.47	17.0	<0.10	0.57	0.022	<5.0	<1.0	<10.0	3.6	<5.0	0.21	<4.0	<5.0	<0.20	14.0	<5.0	<5.0
CSO event	1	052008	SL5-2	1:11 PM	15.4	6.65	12.61	30	>1,600	>1,600	>1,600	<3.0	0.017	0.51	16.0	<0.10	0.58	0.020	<5.0	<1.0	<10.0	3.7	<5.0	<0.20	<4.0	<5.0	<0.20	13.0	<5.0	<5.0
CSO event	1	052008	SL5-3	2:45 PM	14.45	5.81	12.16	40	>1,600	>1,600	>1,600	<3.0	0.017	0.57	15.0	<0.10	0.72	0.020	<5.0	<1.0	<10.0	3.8	<5.0	<0.20	<4.0	<5.0	<0.20	14.0	<5.0	<5.0

Note:
Sampling analytical testing conducted by Microbac Laboratories, Inc.
SL = Sample Location-Refer to Figure 3
MP = Measurement Problem; DO Probe Malfunction - DO probe either recalibrated in field and/or DO membrane replaced following sampling
1= CSO within 24 Hours
>1 = No CSO within last 24 Hours
CSO event samples collected within 24 hours of activation

APPENDIX C : HUNTING CREEK SAMPLING RESULTS

Routine or CSO event	Last CSO Event (days)	Sample ID Date (mmddyy)	Sample ID SL SL5	Field Data Measurments Taken From Sampling Container in the Field Time	Temp (°C)	pH	DO - mg/L	Hardness SM 2340 C mg/L CaCO3	Laboratory Data MPN/100 mL SM 9221E Fecal C.	SM 9223B E. Coli	SM 9221B Total Coliform	mg/L SM 5210B CBOD5	mg/L P or N EPA 365.1 TP	EPA 351.2 TKN	mg/L SM 2540D TSS	mg/L N SM 4500NH3-G NH_3-N	EPA 353.2 NO_3-N	mg/L N EPA 353.2 NO_2-N	µg/L EPA 200.8 Antimony	EPA 200.8 Cadmium	EPA 200.8 Cr III	EPA 200.8 Copper	EPA 200.8 Lead	EPA 245.1 Mercury	EPA 200.8 Nickel	EPA 200.8 Selenium	EPA 200.8 Silver	EPA 200.8 Zinc	µg/L SM 3500 CR D Cr VI	mg/L EPA 1664A Oil/Grease
CSO	1	042109	SL-5-1	11:06 AM	14.7	6.71	7.88	80	1,100	500	16,000	2	0.10	1.3	15	0.2	0.95	<0.02	<5	<0.5	<2	4	<2	<0.5	<2	<5	<0.2	20	<10	<5*
CSO	1	042109	SL-5-2	12:27 PM	17.1	6.72	7.84	72	700	3,000	16,000	2	0.11	1.2	26	0.2	1.1	<0.02	<5	<0.5	<2	5	<2	<0.5	<2	<5	<0.2	20	<10	<5*
CSO	1	042109	SL-5-3	2:10 PM	17.6	6.75	7.39	80	1,300	1,300	>=16,000	<1	0.08	0.9	23	0.2	1.1	<0.02	<5	<0.5	<2	4	<2	<0.5	<2	<5	<0.2	10	<10	N/A
Routine	>1	042709	SL-5	9:50 AM	20.9	6.66	6.45	92	300*	700*	9,000*	<1	0.09	1.1	14	0.3	0.93	<0.02	<5	<0.5	<2	2	<2	<0.5	<2	<5	<0.2	10	<10	<5*
Routine	>1	050509	SL-5	9:57 AM	16.3	6.45	10.75	150	900	1,300	2,000	<1	0.06	1.0	5	<0.2	0.53	<0.02	<5	<0.5	<2	4	<2	<0.5	2	<5	<0.2	20	<10	<5
Routine	>1	051109	SL-5	10:25 AM	16.6	6.53	7.39	100	930	430	2,400	<1	0.18	1.3	17	0.3	1	<0.02	<5	<0.5	<2	2	<2	<0.5	<2	<5	<0.2	<10	<10	<5
Routine	>1	052109	SL-5	9:55 AM	20.8	6.40	8.12	92	43	150	93	<1	0.07	1.3	2	<0.2	2.8	<0.02	<5	<0.5	3.63	4	<2	<0.5	3	<5	<0.2	20	<10	7
CSO	1	061909	SL-5-1	9:17 AM	22.8	5.60	6.75	46	11,000	2,400	2,400	<1	0.09	1.0	18	<0.2	0.77	<0.02	<5	<0.5	<2	3	<2	<0.5	<2	<5	<0.2	30	<10	<5
CSO	1	061909	SL-5-2	10:10 AM	23.2	5.52	6.25	48	>=24,000	>=24,000	>=24,000	<5	0.08	1.6	23	<0.2	0.78	<0.02	<5	<0.5	<2	3	<2	<0.5	<2	<5	<0.2	20	<10	5
CSO	1	061909	SL-5-3	11:50 AM	25.1	5.11	7.02	70	>=24,000	11,000	>=24,000	<5	0.18	1.6	31	0.2	12	<0.02	<5	<0.5	<2	4	<2	<0.5	<2	<5	<0.2	30	<10	<5
Routine	>1	080609	SL-5	8:53 AM					1,100[1]	1,500[1]	11,000[1]																			<5[1]
CSO	1	111409	SL-5-1	9:45 AM																										<5[1]
CSO	1	111409	SL-5-2	10:45 AM																										<5[1]
CSO	1	111409	SL-5-3	11:45 AM																										<5[1]

Note:
Sampling analytical testing conducted by Martel Laboratories, Inc.
SL= Sample Location -Refer To Figure 3.
N/A = Test value unavailable
1= CSO within 24 Hours
>1 = No CSO within last 24 Hours
CSO event samples collected within 24 hours of CSO activation
* = Holding time has been exceeded, additional follow up samples were collected.
[1] = Follow-up sample

APPENDIX B : HUNTING CREEK SAMPLING RESULTS

Routine or CSO event	Last CSO Event (days)	Sample ID Date (mmddyy)	Sample ID SL SL5	Field Data Measurments Taken From Sampling Container in the Field Time	Temp (°C)	pH	DO - mg/L	Hardness SM 2340 C mg/L CaCO3	Laboratory Data MPN/100 mL SM 9221E Fecal C.	SM 9223B E. Coli	SM 9221B Total Coliform	mg/L SM 5210B CBOD5	mg/L P or N EPA 365.1 TP	EPA 351.2 TKN	mg/L SM 2540D TSS	mg/L N SM 4500NH3-G NH_3-N	EPA 353.2 NO_3-N	mg/L N EPA 353.2 NO_2-N	SM 4500N03-H NO_3,NO_2,N	µg/L EPA 200.8 Antimony	EPA 200.8 Cadmium	EPA 200.8 Cr III	EPA 200.8 Copper	EPA 200.8 Lead	EPA 245.1 Mercury	EPA 200.8 Nickel	EPA 200.8 Selenium	EPA 200.8 Silver	EPA 200.8 Zinc	µg/L SM 3500 CR D Cr VI	mg/L EPA 1664A Oil/Grease
Routine	>1	041210	SL-5-1	12:05 PM	19.3	6.17	10.81	120	43	23	1,100	<5	0.05	1.1	8	0.4	1.0	<0.02	1.0	<5	<0.5	4	6	<2	<0.5	170	<5	<0.2	30	<10	<5
Routine	>1	041910	SL-5-1	9:10 AM	14.5	6.60	8.33	120	460*	460*	460*	<1	0.08	1.3	8	0.6	<0.2	0.03	2.9	<5	<0.5	<2	3	<2	<0.5	5	<5	<0.2	40	<10	<5
Routine	>1	042610	SL-5-1	9:00 AM	18.4	7.11	7.62	140	240	240	1100	<1	0.11	0.9	9	0.3	1.7	<0.02	1.7	<5	<0.5	<2	2	<2	<0.5	3	<5	<0.2	30	<10	<5
Routine	>1	051010	SL-5-1	9:45 AM	18.0	6.29	10.07	190	75	75	430	<1	0.08	1.7	5	0.6	1.9	<0.02	1.9	<5	<0.5	<2	4	<2	<0.5	3	<5	<0.2	40	<10	<5
CSO	<1	051210	SL-5-1	8:30 AM	16.6	6.47	10.65	240	210*	210*	2400*	3	0.07	1.3	11	<0.2	1.2	<0.2	1.2	<5	<0.5	<2	3	<2	<0.5	<2	<5	<0.2	<10	<10	<5
CSO	<1	051210	SL-5-2	10:05 AM	18.1	6.27	12.40	290	930*	930*	4600*	8	0.04	2.1	6	0.9	2.5	0.02	2.5	<5	<0.5	<2	3	<2	<0.5	3	<5	<0.2	<10	<10	<5
CSO	<1	051210	SL-5-3	11:10 AM	19.3	6.27	10.42	330	1500	1500	4600	<1	0.07	2.4	<1	0.8	3	0.02	3.0	<5	<0.5	<2	3	<2	<0.5	3	<5	<0.2	<10	<10	<5
CSO	<1	073010	SL-5-1	9:10 AM	23.2	6.14	5.98	55	1500	>=24000	>=24000	2	0.09	0.8	12	<0.2	0.9	<.02	0.9	<5	<0.5	<2	2	2	<0.5	<2	<5	<0.2	30	<10	7
CSO	<1	073010	SL-5-2	10:50 AM	26.8	5.36	5.55	80	2100	2100	2100	<1	0.12	1.2	23	<0.2	0.8	<.02	0.8	<5	<0.5	<2	2	<2	<0.5	<2	<5	<0.2	20	<10	<5
CSO	<1	080610	SL-5-1	11:25 AM	-	-	-		11000[1]	11000[1]	>=24000[1]																				
CSO	<1	080610	SL-5-2	12:09 PM	-	-	-		11000[1]	11000[1]	>=24000[1]																				
CSO	<1	080610	SL-5-3	12:42 PM	-	-	-		430	430	1200		0.08	1.2	6	0.3	1.1	<0.02	1.1	<5	<0.5	<2	3	<2	<0.5	3	<5	<0.2	10	<10	<5
Routine	>1	081010	SL-5-1	12:18 PM	-	-	-		430[1]	430[1]	930[1]																				

Note:
Sampling analytical testing conducted by Martel Laboratories, Inc.
SL= Sample Location -Refer To Figure 3.
1= CSO within 24 Hours
>1 = No CSO within last 24 Hours
CSO event samples collected within 24 hours of CSO activation
* = Holding time has been exceeded, additional follow up samples were collected.
[1] = Follow-up sample

APPENDIX A : HUNTING CREEK SAMPLING RESULTS

Routine or CSO event	Last CSO Event	Sample ID Date (mmddyy)	Sample ID SL SL5	Field Data Measurments Taken From Sampling Container in the Field Time	Temp (°C)	pH	DO - mg/L	Hardness SM 2340 C mg/L CaCO3	Laboratory Data MPN/100 mL SM 9221E Fecal C.	SM 9223B E. Coli	SM 9221B Total Coliform	mg/L SM 5210B CBOD5	mg/L P or N EPA 365.1 TP	EPA 351.2 TKN	mg/L SM 2540D TSS	mg/L N SM 4500NH3-G NH_3-N	EPA 353.2 NO_2-N	EPA 353.2 NO_2-N	SM 4500N03-H NO_3-NO_2-N	µg/L EPA 200.8 Antimony	EPA 200.8 Cadmium	EPA 200.8 Cr III	EPA 200.8 Copper	EPA 200.8 Lead	EPA 245.1 Mercury	EPA 200.8 Nickel	EPA 200.8 Selenium	EPA 200.8 Silver	EPA 200.8 Zinc	µg/L SM 3500 CR D Cr VI	mg/L EPA 1664A Oil/Grease
Routine	>24 hrs	071111	SL-5-1	12:00 PM	29.5	6.48	6.25	110	110	110	1,600	<5	0.41	1.6	9	0.4	2.1	0.03	2.1	<5	<0.5	<2	3	<2	<0.5	2	<5	<0.2	30	<10	<5
CSO	<24 hrs	071411	SL-5-1	10:45 AM	25.7	5.60	6.1	150	2300	2300	15000	<5	0.40	1.6	11	0.2	1.5	0.02	1.5	<5	<0.5	<2	2	<2	<0.5	<2	<5	<0.2	30	<10	<5
CSO	<24 hrs	071411	SL-5-2	11:57 AM	26.0	6.02	6.15	150	930	930	3900	<5	0.26	1.5	6	0.2	0.9	0.02	0.92	<5	<0.5	<2	2	<2	<0.5	<2	<5	<0.2	30	<10	<5
CSO	<24 hrs	071411	SL-5-3	1:19 PM	27.8	6.24	6.55	82	930	930	9300	<5	0.03	1.2	8	0.2	0.56	0.03	0.59	<5	<0.5	<2	2	<2	<0.5	<2	<5	<0.2	30	<10	6.5
Routine	>24 hrs	071811	SL-5-1	11:15 AM	29.4	5.51	9.32	2	300	80	500	2	0.13	1.3	24	<0.2	0.48	0.03	0.51	<5	<0.5	<2	1	<2	<0.5	<2	<5	<0.2	<10	<10	<5
Routine	>24 hrs	072511	SL-5-1	10:37 AM	30.6	6.90	7.09	120	280	280	5000	2	0.15	1.5	8	<0.2	2.5	0.02	2.5	<5	<0.5	<2	3	<2	<0.5	2	<5	<0.2	10	<10	<5
Routine	>24 hrs	080111	SL-5-1	10:20 AM	31.0	7.02	7.48	130	300	300	1100	2	0.11	1.3	23	<0.2	0.62	0.02	0.64	<5	<0.5	<2	1	<2	<0.5	<2	<5	<0.2	<10	<10	7
CSO	<24 hrs	081511	SL-5-1	10:01 AM	25.3	6.76	7.58	96	3500	1400	30000	2	0.16	0.6	26	<0.2	0.24	<0.02	0.24	<5	<0.5	<2	1	<2	<0.5	<2	<5	<0.2	10	<10	<5
CSO	<24 hrs	081511	SL-5-2	11:36 AM	25.9	6.75	6.66	88	3000	1700	30000	2	0.23	0.8	18	0.3	0.67	<0.02	0.67	<5	<0.5	<2	3	<2	<0.5	<2	<5	<0.2	20	<10	<5
CSO	<24 hrs	081511	SL-5-3	12:30 PM	25.5	6.71	6.54	82	13000	13000	24000	<1	0.17	0.6	17	<0.2	0.72	<0.02	0.72	<5	<0.5	<2	4	<2	<0.5	<2	<5	24	20	<10	<5

Note:

Sampling analytical testing conducted by Martel Laboratories, Inc.

SL= Sample Location -Refer To Figure 3.

<24 hrs = CSO within 24 Hours

>24 hrs = No CSO within last 24 Hours

CSO event samples collected within 24 hours of CSO activation

To: Douglas Frasier
From: Katie Conaway

Date: August 24, 2011
Subject: Planning Statement for Alexandria Combined Sewer System
Permit Number: VA0087068

Discharge Type: Combined Sewer System

Outfall 001:

Receiving Stream: Oronoco Bay (Potomac River)
Discharge Flow (Average Flow per CSO Event): 1.36 MG
Latitude/Longitude: 38° 48′ 36″ / -77° 02′ 20″
Streamcode: 1aPOT
Waterbody: VAN-A12E
Water Quality Standards: Class II, Section 6. Special Standards: b, y.
Rivermile: 108.72
Drainage Area: 224 acres

Outfall 002:

Receiving Stream: Hunting Creek
Discharge Flow (Average Flow per CSO Event): 1.41 MG
Latitude/Longitude: 38° 47′ 30″ / -77° 02′ 49″
Streamcode: 1aHUT
Waterbody: VAN-A13E
Water Quality Standards: Class II, Section 6. Special Standards: b, y.
Rivermile: 0.60
Drainage Area: 184 acres

Outfall 003:

Receiving Stream: Hooff Run
Discharge Flow (Average Flow per CSO Event): 0.66 MG
Latitude/Longitude: 38° 48′ 14.9″ / -77° 03′ 28.8″
Streamcode: 1aHFF
Waterbody: VAN-A13R
Water Quality Standards: Class III, Section 7. Special Standards: b.
Rivermile: 0.70
Drainage Area: 132 acres

Outfall 004:

Receiving Stream: Hooff Run
Discharge Flow (Average Flow per CSO Event): 0.27 MG
Latitude/Longitude: 38° 48′ 11.7″ / -77° 03′ 29.6″
Streamcode: 1aHFF
Waterbody: VAN-A13R
Water Quality Standards: Class III, Section 7. Special Standards: b.
Rivermile: 0.63
Drainage Area: N/A, same as Outfall 003

1. **Is there monitoring data for the receiving stream? If yes, please attach latest summary. If no, where is the nearest downstream monitoring station?**

Outfall 001: There is no DEQ monitoring data available for this receiving stream. This waterbody flows into the Potomac River, which, at this specific location, is under the jurisdiction of the District of Columbia.

Outfall 002: Yes. The closest DEQ monitoring station with ambient data is Station 1aHUT000.01, located in the tidal waters of Hunting Creek at the George Washington Memorial Parkway bridge crossing. The station is located approximately 0.28 rivermiles from Outfall 002. The following is a monitoring summary for this station, as taken from the 2010 Integrated Assessment:

Class II, Section 6, Special Standard: b, y.

DEQ ambient water quality and fish tissue monitoring stations 1aHUT000.01, at the George Washington Parkway, 1aHUT001.54, 300 yards downstream from Telegraph Road, and 1aHUT001.72, at Route 611/241 (Telegraph Road).

The fish consumption use is categorized as impaired due to a Virginia Department of Health, Division of Health Hazards Control, PCB fish consumption advisory and PCB fish tissue monitoring. Additionally, SPMD data (at station 1aHUT001.54) and water quality data (at station 1aHUT001.72) each revealed exceedances of the human health criteria of 0.64 parts per billion (ppb) PCBs. A PCB TMDL for the tidal Potomac River watershed has been completed and approved. E. coli monitoring finds a bacterial impairment, resulting in an impaired classification for the recreation use. The wildlife use is considered fully supporting.

The submerged aquatic vegetation data is assessed as fully supporting the aquatic life use. For the open water aquatic life subuse; the thirty day mean is acceptable, however, the seven day mean and instantaneous levels have not been assessed. The wildlife use is considered fully supporting.

Outfall 003: There are no DEQ monitoring stations located on Hooff Run. The closest downstream DEQ monitoring station with ambient data is Station 1aHUT000.01, located in the tidal waters of Hunting Creek at the George Washington Memorial Parkway bridge crossing. The station is located approximately 1.29 rivermiles downstream from Outfall 003. The following is a monitoring summary for this station, as taken from the 2010 Integrated Assessment:

Class II, Section 6, Special Standard: b, y.

DEQ ambient water quality and fish tissue monitoring stations 1aHUT000.01, at the George Washington Parkway, 1aHUT001.54, 300 yards downstream from Telegraph Road, and 1aHUT001.72, at Route 611/241 (Telegraph Road).

The fish consumption use is categorized as impaired due to a Virginia Department of Health, Division of Health Hazards Control, PCB fish consumption advisory and PCB fish tissue monitoring. Additionally, SPMD data (at station 1aHUT001.54) and water quality data (at station 1aHUT001.72) each revealed exceedances of the human health criteria of 0.64 parts per billion (ppb) PCBs. A PCB TMDL for the tidal Potomac River watershed has been completed and approved. E. coli monitoring finds a bacterial impairment, resulting in an impaired classification for the recreation use. The wildlife use is considered fully supporting.

The submerged aquatic vegetation data is assessed as fully supporting the aquatic life use. For the open water aquatic life subuse; the thirty day mean is acceptable, however, the seven day mean and instantaneous levels have not been assessed. The wildlife use is considered fully supporting.

Outfall 004: There are no DEQ monitoring stations located on Hooff Run. The closest downstream DEQ monitoring station with ambient data is Station 1aHUT000.01, located in the tidal waters of Hunting Creek at the George Washington Memorial Parkway bridge crossing. The station is located approximately 1.22 rivermiles downstream from Outfall 004. The following is a monitoring summary for this station, as taken from the 2010 Integrated Assessment:

Class II, Section 6, Special Standard: b, y.

DEQ ambient water quality and fish tissue monitoring stations 1aHUT000.01, at the George Washington Parkway, 1aHUT001.54, 300 yards downstream from Telegraph Road, and 1aHUT001.72, at Route 611/241 (Telegraph Road).

The fish consumption use is categorized as impaired due to a Virginia Department of Health, Division of Health Hazards Control, PCB fish consumption advisory and PCB fish tissue monitoring. Additionally, SPMD data (at station 1aHUT001.54) and water quality data (at station 1aHUT001.72) each revealed exceedances of the human health criteria of 0.64 parts per billion (ppb) PCBs. A PCB TMDL for the tidal Potomac River watershed has been completed and approved. E. coli monitoring finds a bacterial impairment, resulting in an impaired classification for the recreation use. The wildlife use is considered fully supporting.

The submerged aquatic vegetation data is assessed as fully supporting the aquatic life use. For the open water aquatic life subuse; the thirty day mean is acceptable, however, the seven day mean and instantaneous levels have not been assessed. The wildlife use is considered fully supporting.

2. **Is the receiving stream on the current 303(d) list?**
   a. **If yes, what is the impairment?**
   b. **Has the TMDL been prepared?**
   c. **If yes, what is the WLA for the discharge?**
   d. **If no, what is the schedule for the TMDL?**

Outfall 001: No. The Virginia portion of the Potomac River (Oronoco Bay) that receives the discharge from Outfall 001 is not currently listed on the 303(d) list.

a. N/A
b. N/A
c. N/A
d. N/A

Outfall 002: Yes. Hunting Creek is on the impaired waters list.

a. Recreational Use Impairment: Sufficient excursions from the maximum E. coli bacteria criterion (17 of 39 samples - 43.6%) were recorded at DEQ's ambient water quality monitoring station (1aHUT000.01) at the George Washington Parkway crossing and (3 of 11 - 27.3%) were recorded at DEQ's ambient water quality monitoring station (1aHUT001.72) at Route 611/241 (Telegraph Road) to assess this stream segment as not supporting the recreation use goal for the 2010 water quality assessment.

Fish Consumption Use Impairment: The fish consumption use is categorized as impaired due to a Virginia Department of Health, Division of Health Hazards Control, PCB fish consumption advisory. The advisory, dated 4/19/99 and modified 12/13/04 and 10/7/09, limits consumption of bullhead catfish, channel catfish less than eighteen inches long, largemouth bass, anadromous (coastal) striped bass, sunfish species, smallmouth bass, white catfish, white perch, gizzard shad, and yellow perch to no more than two meals per month. The advisory also bans the consumption of American eel, carp and channel catfish greater than eighteen inches long. The affected area includes the tidal portions of the following tributaries and embayments from the I-395 bridge (above the Woodrow Wilson Bridge) to the Potomac River Bridge at Route 301: Fourmile Run, Hunting Creek, Little Hunting Creek, Pohick Creek, Accotink Creek, Occoquan River, Neabsco Creek, Powells Creek, Quantico Creek, Chopawamsic Creek, Aquia Creek, and Potomac Creek. Additionally, there were excursions above the water quality criterion based fish tissue value (TV) of 20 parts per billion (ppb) for polychlorinated biphenyls (PCBs) in fish tissue were recorded in 6 species) of fish (12 total samples); largemouth bass, carp, white sucker, gizzard shad, white perch and redbreast sunfish collected at monitoring station 1aHUT000.01 in 2008.

b. TMDL for Recreational Use Impairment: Yes. EPA Approved 11/10/2010
TMDL for PCBs in Fish Tissue: Yes. EPA Approved 10/31/2007

c. WLA for Recreational Use Impairment: **6.26E+13 cfu/year of *E. coli* bacteria. This is an 80% required reduction.**

WLA for PCBs in Fish Tissue Impairment: VA0087068 was identified as a source of PCBs in the TMDL, and was provided a Waste Load Allocation.

d. N/A

Outfall 003: No. The receiving stream (non-tidal portion of Hooff Run) has not been assessed by DEQ and therefore, is not on the impaired waters list.

a. N/A
b. N/A
c. N/A
d. N/A

Outfall 004: No. The receiving stream (non-tidal portion of Hooff Run) has not been assessed by DEQ and therefore, is not on the impaired waters list.

a. N/A
b. N/A
c. N/A
d. N/A

3. **If the answer to (2) above is no, is there a downstream 303(d) listed impairment?**
   a. **If yes, what is the impairment?**
   b. **Has a TMDL been prepared?**
   c. **Will the TMDL include the receiving stream?**
   d. **Is there a WLA for the discharge?**
   e. **What is the schedule for the TMDL?**

Outfall 001: Yes. The District of Columbia's portion of the Potomac River that stretches from Haines Point to the Woodrow Wilson Bridge (referred to as the "Lower Potomac" segment in DC's Integrated Assessment) is listed as impaired on the 2010 3030(d) list.

a. Bacteria Impairment, Fecal Coliform Bacteria
Organics Impairment, PCBs

b. Bacteria Impairment – Yes. Completed in 2004
PCB Impairment – Yes. Completed in 2007

c. Bacteria TMDL – Yes.
PCB TMDL – Yes.

d. Bacteria TMDL – No WLA specifically given to the Alexandria CSS.
PCB TMDL – Yes. VA0087068 was identified as a source of PCBs in the TMDL, and was provided a Waste Load Allocation.

e. See "b" above.

Outfall 002: N/A

Outfall 003: Yes. There are several downstream listed stream segments, including tidal Hooff Run and tidal Hunting Creek.

a. Tidal Hooff Run Impairment: Fish Consumption Use Impairment: Fish Consumption Use Impairment: The fish consumption use is categorized as impaired due to a Virginia Department of Health, Division of Health Hazards Control, PCB fish consumption advisory. The advisory, dated 4/19/99 and modified 12/13/04 and 10/7/09, limits consumption of bullhead catfish, channel catfish less than eighteen inches long, largemouth bass, anadromous (coastal) striped bass, sunfish species, smallmouth bass, white catfish, white perch, gizzard shad, and yellow perch to no more than two meals per month. The advisory also bans the consumption of American eel, carp and channel catfish greater than eighteen inches long. The affected area includes the tidal portions of the following tributaries and embayments from the I-395 bridge (above the Woodrow Wilson Bridge) to the Potomac River Bridge at Route 301: Fourmile Run, Hunting Creek, Little Hunting Creek, Pohick Creek, Accotink Creek, Occoquan River, Neabsco Creek, Powells Creek, Quantico Creek, Chopawamsic Creek, Aquia Creek, and Potomac Creek.

   Hunting Creek Recreational Use Impairment: Sufficient excursions from the maximum E. coli bacteria criterion (17 of 39 samples - 43.6%) were recorded at DEQ's ambient water quality monitoring station (1aHUT000.01) at the George Washington Parkway crossing and (3 of 11 - 27.3%) were recorded at DEQ's ambient water quality monitoring station (1aHUT001.72) at Route 611/241 (Telegraph Road) to assess this stream segment as not supporting the recreation use goal for the 2010 water quality assessment.

   Hunting Creek Fish Consumption Use Impairment: The fish consumption use is categorized as impaired due to a Virginia Department of Health, Division of Health Hazards Control, PCB fish consumption advisory. The advisory, dated 4/19/99 and modified 12/13/04 and 10/7/09, limits consumption of bullhead catfish, channel catfish less than eighteen inches long, largemouth bass, anadromous (coastal) striped bass, sunfish species, smallmouth bass, white catfish, white perch,

gizzard shad, and yellow perch to no more than two meals per month. The advisory also bans the consumption of American eel, carp and channel catfish greater than eighteen inches long. The affected area includes the tidal portions of the following tributaries and embayments from the I-395 bridge (above the Woodrow Wilson Bridge) to the Potomac River Bridge at Route 301: Fourmile Run, Hunting Creek, Little Hunting Creek, Pohick Creek, Accotink Creek, Occoquan River, Neabsco Creek, Powells Creek, Quantico Creek, Chopawamsic Creek, Aquia Creek, and Potomac Creek. Additionally, there were excursions above the water quality criterion based fish tissue value (TV) of 20 parts per billion (ppb) for polychlorinated biphenyls (PCBs) in fish tissue were recorded in 6 species) of fish (12 total samples); largemouth bass, carp, white sucker, gizzard shad, white perch and redbreast sunfish collected at monitoring station 1aHUT000.01 in 2008.

b. TMDL for Recreational Use Impairment: Yes. EPA Approved 11/10/2010
TMDL for PCBs in Fish Tissue: Yes. EPA Approved 10/31/2007

c. While the TMDLs did not specifically include the receiving stream (non-tidal Hooff Run) the TMDLs did include all upstream point sources in the watershed.

d. WLA for Recreational Use Impairment: **7.68E+11 cfu/year of *E. coli* bacteria. This is a 99% required reduction.**

WLA for PCBs in Fish Tissue Impairment: VA0087068 was identified as a source of PCBs in the TMDL, and was provided a Waste Load Allocation.

e. See "b" above.

Outfall 004: Yes. There are several downstream listed stream segments, including tidal Hooff Run and tidal Hunting Creek.

a. Tidal Hooff Run Impairment: Fish Consumption Use Impairment: Fish Consumption Use Impairment: The fish consumption use is categorized as impaired due to a Virginia Department of Health, Division of Health Hazards Control, PCB fish consumption advisory. The advisory, dated 4/19/99 and modified 12/13/04 and 10/7/09, limits consumption of bullhead catfish, channel catfish less than eighteen inches long, largemouth bass, anadromous (coastal) striped bass, sunfish species, smallmouth bass, white catfish, white perch, gizzard shad, and yellow perch to no more than two meals per month. The advisory also bans the consumption of American eel, carp and channel catfish greater than eighteen inches long. The affected area includes the tidal portions of the following tributaries and embayments from the I-395 bridge (above the Woodrow Wilson Bridge) to the Potomac River Bridge at Route 301: Fourmile Run, Hunting Creek, Little Hunting Creek, Pohick Creek, Accotink Creek, Occoquan River, Neabsco Creek, Powells Creek, Quantico Creek, Chopawamsic Creek, Aquia Creek, and Potomac Creek.

Hunting Creek Recreational Use Impairment: Sufficient excursions from the maximum E. coli bacteria criterion (17 of 39 samples - 43.6%) were recorded at DEQ's ambient water quality monitoring station (1aHUT000.01) at the George Washington Parkway crossing and (3 of 11 - 27.3%) were recorded at DEQ's ambient water quality monitoring station (1aHUT001.72) at Route 611/241 (Telegraph Road) to assess this stream segment as not supporting the recreation use goal for the 2010 water quality assessment.

Hunting Creek Fish Consumption Use Impairment: The fish consumption use is categorized as impaired due to a Virginia Department of Health, Division of Health Hazards Control, PCB fish

consumption advisory. The advisory, dated 4/19/99 and modified 12/13/04 and 10/7/09, limits consumption of bullhead catfish, channel catfish less than eighteen inches long, largemouth bass, anadromous (coastal) striped bass, sunfish species, smallmouth bass, white catfish, white perch, gizzard shad, and yellow perch to no more than two meals per month. The advisory also bans the consumption of American eel, carp and channel catfish greater than eighteen inches long. The affected area includes the tidal portions of the following tributaries and embayments from the I-395 bridge (above the Woodrow Wilson Bridge) to the Potomac River Bridge at Route 301: Fourmile Run, Hunting Creek, Little Hunting Creek, Pohick Creek, Accotink Creek, Occoquan River, Neabsco Creek, Powells Creek, Quantico Creek, Chopawamsic Creek, Aquia Creek, and Potomac Creek. Additionally, there were excursions above the water quality criterion based fish tissue value (TV) of 20 parts per billion (ppb) for polychlorinated biphenyls (PCBs) in fish tissue were recorded in 6 species) of fish (12 total samples); largemouth bass, carp, white sucker, gizzard shad, white perch and redbreast sunfish collected at monitoring station 1aHUT000.01 in 2008.

b. TMDL for Recreational Use Impairment: Yes. EPA Approved 11/10/2010
TMDL for PCBs in Fish Tissue: Yes. EPA Approved 10/31/2007

c. While the TMDLs did not specifically include the receiving stream (non-tidal Hooff Run) the TMDLs did include all upstream point sources in the watershed.

d. WLA for Recreational Use Impairment: **8.52E+11 cfu/year of *E. coli* bacteria. This is a 99% required reduction.**

WLA for PCBs in Fish Tissue Impairment: VA0087068 was identified as a source of PCBs in the TMDL, and was provided a Waste Load Allocation.

e. See "b" above.

4. Is there monitoring or other conditions that Planning/Assessment needs in the permit?

- Rather than including a numeric WLA for PCBs, please include the special conditions text regarding PCB monitoring.
- There is a completed downstream TMDL for the aquatic life use impairment for the Chesapeake Bay. However, the Bay TMDL and the WLAs contained within the TMDL are not addressed in this planning statement.

5. Fact Sheet Requirements – Please provide information on other VPDES permits or VADEQ monitoring stations located within a 2 mile radius of the facility. In addition, please provide information on any drinking water intakes located within a 5 mile radius of the facility.

There are several DEQ monitoring stations within a 2 mile radius of this facility:
1aHUT000.01: Hunting Creek at the George Washington Memorial Highway bridge crossing
1aHUT001.54: Hunting Creek, located 300 yards downstream from the Telegraph Road bridge crossing
1aHUT001.72: Hunting Creek at the Telegraph Road bridge crossing

There are several VPDES permitted facilities within a 2 mile radius of this facility:
VA0090107 – Carlyle Development II
VA0025160 – Alexandria Advanced Wastewater Treatment Plant

There are no drinking water intakes within a five mile radius of this facility.

Dissolved Oxygen Criteria (9VAC25-260-185)

Designated Use	Criteria Concentration/Duration	Temporal Application
Migratory fish spawning and nursery	7-day mean > 6 mg/L (tidal habitats with 0-0.5 ppt salinity)	February 1 – May 31
	Instantaneous minimum > 5 mg/L	
Open-water[1,2]	30-day mean > 5.5 mg/L (tidal habitats with 0-0.5 ppt salinity) 30-day mean > 5 mg/L (tidal habitats with >0.5 ppt salinity)	Year-round
	7-day mean > 4 mg/L	
	Instantaneous minimum > 3.2 mg/L at temperatures < 29°C Instantaneous minimum > 4.3 mg/L at temperatures > 29°C	
Deep-water	30-day mean >3 mg/L	June 1-September 30
	1-day mean > 2.3 mg/L	
	Instantaneous minimum > 1.7 mg/L	
Deep-channel	Instantaneous minimum > 1 mg/L	June 1-September 30

[1]See subsection aa of 9VAC25-260-310 for site specific seasonal open-water dissolved oxygen criteria applicable to the tidal Mattaponi and Pamunkey Rivers and their tidal tributaries.

[2]In applying this open-water instantaneous criterion to the Chesapeake Bay and its tidal tributaries where the existing water quality for dissolved oxygen exceeds an instantaneous minimum of 3.2 mg/L, that higher water quality for dissolved oxygen shall be provided antidegradation protection in accordance with section 30 subsection A.2 of the Water Quality Standards.

Outall 001

Date	Temperature	pH	CaCO3	cBOD5	TP	NH3	TSS	Copper	Zinc	Cr VI	O&G
10/26/2007	14.9	6.96	30	0	0.53	0.29	47	12	54	8.3	0
10/26/2007	17.2	6.87	30	0	0.45	0.23	40	13	55	0	0
10/26/2007	17.6	7.42	40	0	0.58	0	34	11	39	0	0
10/26/2007	18.1	7.4	3.2	0	0.73	0.55	39	15	45	6.2	0
11/15/2007	15.9	7.11	50	11	1	1.5	170	18	30	*	12
11/15/2007	14	7.1	34	12	0.41	0.9	41	16	69	*	0
11/15/2007	14.9	7.05	47	9.6	0.59	1.3	17	14	60	*	0
11/15/2007	13.7	7.25	40	8.5	0.68	1.3	39	16	61	*	0
1/11/2008	10.9	MP	50	13	0.61	1.3	85	10	26	6.3	8
1/11/2008	11.4	MP	40	12	0	1.4	67	14	29	5.7	6
2/1/2008	6.3	6.2	74	48	0.67	1.5	87	11	72	0	5.4
2/1/2008	5	6.86	36	38	0.75	1.2	200	7.4	50	0	5.5
2/1/2008	5.8	6.65	28	24	0.51	1.1	51	12	64	0	13
2/1/2008	6.1	6.81	30	19	0.39	0.88	49	12	61	0	9
2/1/2008	6.8	6.68	48	31	0.57	0.92	42	15	72	6	20

90th percentile:	14.9
90th percentile:	7.4
Average:	39

Temperature	°C
pH	S.U.
CaCO3, cBOD5, TP NH3 and TSS	mg/L
Copper, Zinc, CR VI, O&G	µg/L

MP = Measurement Problem, probe malfunction

*Not Analyzed

Outall 002

Date	Temperature	pH	CaCO3	cBOD5	TP	NH3	TSS	Copper	Zinc	Cr VI	O&G
4/28/2008	17.8	5.54	23	31	0.3	1.8	22	28	42	5.3	0
4/28/2008	18.1	5.57	22	22	0.26	0.79	16	30	41	5.3	0
4/28/2008	18.2	5.82	20	29	0.39	0.78	17	30	43	6.7	0
4/28/2008	17.2	6.43	4	19	0.2	0.36	0	14	21	0	0
5/9/2008	19	6.31	72	14	0.42	1.3	22	15	42	0	0
5/9/2008	19	6.81	0	7.5	0.21	0.53	23	12	29	0	0
5/9/2008	18.8	6.72	0	4.5	0.21	0.37	28	11	24	0	0
5/9/2008	18.8	6.66	28	7.8	0.28	0.51	20	11	31	0	0
5/9/2008	19	6.74	0	5.4	0.16	0.29	36	9.8	23	0	0
5/12/2008	22.6	5.7	80	6.6	0.41	0.75	26	17	40	0	0
5/12/2008	17.2	5.58	92	5.4	0.4	0.73	21	17	35	0	0
5/12/2008	20.7	5.45	50	6.3	0.32	0.59	19	16	31	0	0
5/12/2008	18.4	5.13	82	6	0.44	0.23	23	15	35	0	0
5/12/2008	24.9	MP	70	6	0.34	0.67	21	17	49	0	0
5/12/2008	26	MP	98	5.4	0.44	0.77	18	3.5	0	0	0
7/22/2008	26.3	6.68	48	23	1.2	4.7	130	73	51	10	8.2
90th percentile:	25.5										
	90th percentile:	6.7									
		Average:	43								

Temperature	°C
pH	S.U.
CaCO3, cBOD5, TP NH3 and TSS	mg/L
Copper, Zinc, CR VI, O&G	µg/L

MP = Measurement Problem, probe malfunction

Outall 003

Date	Temperature	pH	CaCO3	cBOD5	TP	NH3	TSS	Copper	Zinc	Cr VI	O&G
5/4/2009	16	6.64	44	21	1.2	1.5	52	8	50	0	6
5/4/2009	16.6	7.89	72	39	1.2	2	38	9	20	0	7
5/26/2009	20.9	6.9	470	24	1.1	1.9	71	6	30	0	0
5/26/2009	20.6	6.67	100	31	1.3	2	37	10	30	0	13
6/3/2009	24.9	6.13	140	68	0.46	1.1	100	15	90	0	8
6/3/2009	24.1	6.01	130	17	0.45	0.6	51	12	60	0	7
6/3/2009	24.2	5.87	130	15	0.47	1.1	71	8	50	0	7
6/3/2009	22.1	6.54	110	92	1.2	2.5	47	9	50	0	15
7/23/2009	27.2	6.46	140	42	1.3	3.4	78	19	70	0	7
7/23/2009	26.7	6.27	150	49	1.3	4	72	22	80	0	15
90th percentile:	26.8										
	90th percentile:	7.0									
		Average:	149								

Temperature	°C
pH	S.U.
CaCO3, cBOD5, TP NH3 and TSS	mg/L
Copper, Zinc, CR VI, O&G	µg/L

Outall 004

Date	Temperature	pH	CaCO3	cBOD5	TP	NH3	TSS	Copper	Zinc	Cr VI	O&G
5/3/2010	21.5	7.35	270	99	3.5	18	90	6	10	0	13
5/3/2010	21.4	7.34	350	91	3.7	18	88	6	10	0	15
5/3/2010	21.2	7.53	480	91	4.1	19	140	5	0	0	14
6/1/2010	24.2	5.75	80	10	0.8	0.8	53	7	200	0	0
6/1/2010	24.5	6.75	95	32	0.7	2.9	78	8	50	0	0
7/10/2010	26.1	7	50	59	1.8	8.2	34	13	50	0	12
7/10/2010	26	6.75	44	56	1.6	7.8	55	12	50	0	9
7/10/2010	25.9	6.29	52	59	1.3	4.7	82	6	40	0	11
7/10/2010	26.1	6.91	78	71	1.6	5.7	73	9	50	0	13
7/29/2010	29.5	6.7	210	78	1.9	6.7	250	7	40	0	16
7/29/2010	29.5	7.06	80	53	1.4	7.3	95	18	70	0	12
7/29/2010	27.7	6.38	90	56	1.4	3.7	150	5	40	0	11
7/29/2010	27	6.5	100	71	1.8	6.9	71	0	20	0	32
90th percentile:	29.1										
	90th percentile:	7.3									
		Average:	152								

Temperature	°C
pH	S.U.
CaCO3, cBOD5, TP NH3 and TSS	mg/L
Copper, Zinc, CR VI, O&G	µg/L

MP = Measurement Problem, probe malfunction

FRESHWATER
WATER QUALITY CRITERIA / WASTELOAD ALLOCATION ANALYSIS

Facility Name: City of Alexandria CSS - Outfall 001 Permit No.: VA0087068

Receiving Stream: Oronoco Bay Version: OWP Guidance Memo 00-2011 (8/24/00)

Stream Information

Mean Hardness (as CaCO3) =	134	mg/L
90% Temperature (Annual) =	30	deg C
90% Temperature (Wet season) =	19	deg C
90% Maximum pH =	7.8	SU
10% Maximum pH =	6.3	SU
Tier Designation (1 or 2) =	1	
Public Water Supply (PWS) Y/N? =	n	
Trout Present Y/N? =	n	
Early Life Stages Present Y/N? =	y	

Stream Flows

1Q10 (Annual) =	1	MGD
7Q10 (Annual) =	1	MGD
30Q10 (Annual) =	1	MGD
1Q10 (Wet season) =	1	MGD
30Q10 (Wet season)	1	MGD
30Q5 =	1	MGD
Harmonic Mean =	1	MGD

Mixing Information

Annual - 1Q10 Mix =	100	%
- 7Q10 Mix =	100	%
- 30Q10 Mix =	100	%
Wet Season - 1Q10 Mix =	100	%
- 30Q10 Mix =	100	%

Effluent Information

Mean Hardness (as CaCO3) =	39	mg/L
90% Temp (Annual) =	25	deg C
90% Temp (Wet season) =	15	deg C
90% Maximum pH =	7.4	SU
10% Maximum pH =	6.7	SU
Discharge Flow =	1	MGD

Parameter	Background	Water Quality Criteria				Wasteload Allocations				Antidegradation Baseline				Antidegradation Allocations				Most Limiting Allocations			
(ug/l unless noted)	Conc.	Acute	Chronic	HH (PWS)	HH	Acute	Chronic	HH (PWS)	HH	Acute	Chronic	HH (PWS)	HH	Acute	Chronic	HH (PWS)	HH	Acute	Chronic	HH (PWS)	HH
Acenapthene	0	--	--	na	9.9E+02	--	--	na	2.0E+03	--	--	--	--	--	--	--	--	--	--	na	2.0E+03
Acrolein	0	--	--	na	9.3E+00	--	--	na	1.9E+01	--	--	--	--	--	--	--	--	--	--	na	1.9E+01
Acrylonitrile[C]	0	--	--	na	2.5E+00	--	--	na	5.0E+00	--	--	--	--	--	--	--	--	--	--	na	5.0E+00
Aldrin [C]	0	3.0E+00	--	na	5.0E-04	6.0E+00	--	na	1.0E-03	--	--	--	--	--	--	--	--	6.0E+00	--	na	1.0E-03
Ammonia-N (mg/l) (Yearly)	0	1.83E+01	1.80E+00	na	--	3.7E+01	3.6E+00	na	--	--	--	--	--	--	--	--	--	3.7E+01	3.6E+00	na	--
Ammonia-N (mg/l) (High Flow)	0	1.83E+01	3.54E+00	na	--	3.7E+01	7.1E+00	na	--	--	--	--	--	--	--	--	--	3.7E+01	7.1E+00	na	--
Anthracene	0	--	--	na	4.0E+04	--	--	na	8.0E+04	--	--	--	--	--	--	--	--	--	--	na	8.0E+04
Antimony	0	--	--	na	6.4E+02	--	--	na	1.3E+03	--	--	--	--	--	--	--	--	--	--	na	1.3E+03
Arsenic	0	3.4E+02	1.5E+02	na	--	6.8E+02	3.0E+02	na	--	--	--	--	--	--	--	--	--	6.8E+02	3.0E+02	na	--
Barium	0	--	--	na	--	--	--	na	--	--	--	--	--	--	--	--	--	--	--	na	--
Benzene [C]	0	--	--	na	5.1E+02	--	--	na	1.0E+03	--	--	--	--	--	--	--	--	--	--	na	1.0E+03
Benzidine[C]	0	--	--	na	2.0E-03	--	--	na	4.0E-03	--	--	--	--	--	--	--	--	--	--	na	4.0E-03
Benzo (a) anthracene [C]	0	--	--	na	1.8E-01	--	--	na	3.6E-01	--	--	--	--	--	--	--	--	--	--	na	3.6E-01
Benzo (b) fluoranthene [C]	0	--	--	na	1.8E-01	--	--	na	3.6E-01	--	--	--	--	--	--	--	--	--	--	na	3.6E-01
Benzo (k) fluoranthene [C]	0	--	--	na	1.8E-01	--	--	na	3.6E-01	--	--	--	--	--	--	--	--	--	--	na	3.6E-01
Benzo (a) pyrene [C]	0	--	--	na	1.8E-01	--	--	na	3.6E-01	--	--	--	--	--	--	--	--	--	--	na	3.6E-01
Bis2-Chloroethyl Ether [C]	0	--	--	na	5.3E+00	--	--	na	1.1E+01	--	--	--	--	--	--	--	--	--	--	na	1.1E+01
Bis2-Chloroisopropyl Ether	0	--	--	na	6.5E+04	--	--	na	1.3E+05	--	--	--	--	--	--	--	--	--	--	na	1.3E+05
Bis 2-Ethylhexyl Phthalate [C]	0	--	--	na	2.2E+01	--	--	na	4.4E+01	--	--	--	--	--	--	--	--	--	--	na	4.4E+01
Bromoform [C]	0	--	--	na	1.4E+03	--	--	na	2.8E+03	--	--	--	--	--	--	--	--	--	--	na	2.8E+03
Butylbenzylphthalate	0	--	--	na	1.9E+03	--	--	na	3.8E+03	--	--	--	--	--	--	--	--	--	--	na	3.8E+03
Cadmium	0	3.3E+00	1.0E+00	na	--	6.7E+00	2.0E+00	na	--	--	--	--	--	--	--	--	--	6.7E+00	2.0E+00	na	--
Carbon Tetrachloride [C]	0	--	--	na	1.6E+01	--	--	na	3.2E+01	--	--	--	--	--	--	--	--	--	--	na	3.2E+01
Chlordane [C]	0	2.4E+00	4.3E-03	na	8.1E-03	4.8E+00	8.6E-03	na	1.6E-02	--	--	--	--	--	--	--	--	4.8E+00	8.6E-03	na	1.6E-02
Chloride	0	8.6E+05	2.3E+05	na	--	1.7E+06	4.6E+05	na	--	--	--	--	--	--	--	--	--	1.7E+06	4.6E+05	na	--
TRC	0	1.9E+01	1.1E+01	na	--	3.8E+01	2.2E+01	na	--	--	--	--	--	--	--	--	--	3.8E+01	2.2E+01	na	--
Chlorobenzene	0	--	--	na	1.6E+03	--	--	na	3.2E+03	--	--	--	--	--	--	--	--	--	--	na	3.2E+03

Parameter	Background	Water Quality Criteria				Wasteload Allocations				Antidegradation Baseline				Antidegradation Allocations				**Most Limiting Allocations**			
(ug/l unless noted)	Conc.	Acute	Chronic	HH (PWS)	HH	Acute	Chronic	HH (PWS)	HH	Acute	Chronic	HH (PWS)	HH	Acute	Chronic	HH (PWS)	HH	**Acute**	**Chronic**	**HH (PWS)**	**HH**
Chlorodibromomethane[C]	0	--	--	na	1.3E+02	--	--	na	2.6E+02	--	--	--	--	--	--	--	--	--	--	na	2.6E+02
Chloroform	0	--	--	na	1.1E+04	--	--	na	2.2E+04	--	--	--	--	--	--	--	--	--	--	na	2.2E+04
2-Chloronaphthalene	0	--	--	na	1.6E+03	--	--	na	3.2E+03	--	--	--	--	--	--	--	--	--	--	na	3.2E+03
2-Chlorophenol	0	--	--	na	1.5E+02	--	--	na	3.0E+02	--	--	--	--	--	--	--	--	--	--	na	3.0E+02
Chlorpyrifos	0	8.3E-02	4.1E-02	na	--	1.7E-01	8.2E-02	na	--	--	--	--	--	--	--	--	--	1.7E-01	8.2E-02	na	--
Chromium III	0	5.1E+02	6.6E+01	na	--	1.0E+03	1.3E+02	na	--	--	--	--	--	--	--	--	--	1.0E+03	1.3E+02	na	--
Chromium VI	0	1.6E+01	1.1E+01	na	--	3.2E+01	2.2E+01	na	--	--	--	--	--	--	--	--	--	3.2E+01	2.2E+01	na	--
Chromium, Total	0	--	--	1.0E+02	--	--	--	na	--	--	--	--	--	--	--	--	--	--	--	na	--
Chrysene [C]	0	--	--	na	1.8E-02	--	--	na	3.6E-02	--	--	--	--	--	--	--	--	--	--	na	3.6E-02
Copper	0	1.2E+01	7.9E+00	na	--	2.3E+01	1.6E+01	na	--	--	--	--	--	--	--	--	--	2.3E+01	1.6E+01	na	--
Cyanide, Free	0	2.2E+01	5.2E+00	na	1.6E+04	4.4E+01	1.0E+01	na	3.2E+04	--	--	--	--	--	--	--	--	4.4E+01	1.0E+01	na	3.2E+04
DDD [C]	0	--	--	na	3.1E-03	--	--	na	6.2E-03	--	--	--	--	--	--	--	--	--	--	na	6.2E-03
DDE [C]	0	--	--	na	2.2E-03	--	--	na	4.4E-03	--	--	--	--	--	--	--	--	--	--	na	4.4E-03
DDT [C]	0	1.1E+00	1.0E-03	na	2.2E-03	2.2E+00	2.0E-03	na	4.4E-03	--	--	--	--	--	--	--	--	2.2E+00	2.0E-03	na	4.4E-03
Demeton	0	--	1.0E-01	na	--	--	2.0E-01	na	--	--	--	--	--	--	--	--	--	--	2.0E-01	na	--
Diazinon	0	1.7E-01	1.7E-01	na	--	3.4E-01	3.4E-01	na	--	--	--	--	--	--	--	--	--	3.4E-01	3.4E-01	na	--
Dibenz(a,h)anthracene [C]	0	--	--	na	1.8E-01	--	--	na	3.6E-01	--	--	--	--	--	--	--	--	--	--	na	3.6E-01
1,2-Dichlorobenzene	0	--	--	na	1.3E+03	--	--	na	2.6E+03	--	--	--	--	--	--	--	--	--	--	na	2.6E+03
1,3-Dichlorobenzene	0	--	--	na	9.6E+02	--	--	na	1.9E+03	--	--	--	--	--	--	--	--	--	--	na	1.9E+03
1,4-Dichlorobenzene	0	--	--	na	1.9E+02	--	--	na	3.8E+02	--	--	--	--	--	--	--	--	--	--	na	3.8E+02
3,3-Dichlorobenzidine[C]	0	--	--	na	2.8E-01	--	--	na	5.6E-01	--	--	--	--	--	--	--	--	--	--	na	5.6E-01
Dichlorobromomethane [C]	0	--	--	na	1.7E+02	--	--	na	3.4E+02	--	--	--	--	--	--	--	--	--	--	na	3.4E+02
1,2-Dichloroethane [C]	0	--	--	na	3.7E+02	--	--	na	7.4E+02	--	--	--	--	--	--	--	--	--	--	na	7.4E+02
1,1-Dichloroethylene	0	--	--	na	7.1E+03	--	--	na	1.4E+04	--	--	--	--	--	--	--	--	--	--	na	1.4E+04
1,2-trans-dichloroethylene	0	--	--	na	1.0E+04	--	--	na	2.0E+04	--	--	--	--	--	--	--	--	--	--	na	2.0E+04
2,4-Dichlorophenol	0	--	--	na	2.9E+02	--	--	na	5.8E+02	--	--	--	--	--	--	--	--	--	--	na	5.8E+02
2,4-Dichlorophenoxy acetic acid (2,4-D)	0	--	--	na	--	--	--	na	--	--	--	--	--	--	--	--	--	--	--	na	--
1,2-Dichloropropane[C]	0	--	--	na	1.5E+02	--	--	na	3.0E+02	--	--	--	--	--	--	--	--	--	--	na	3.0E+02
1,3-Dichloropropene [C]	0	--	--	na	2.1E+02	--	--	na	4.2E+02	--	--	--	--	--	--	--	--	--	--	na	4.2E+02
Dieldrin [C]	0	2.4E-01	5.6E-02	na	5.4E-04	4.8E-01	1.1E-01	na	1.1E-03	--	--	--	--	--	--	--	--	4.8E-01	1.1E-01	na	1.1E-03
Diethyl Phthalate	0	--	--	na	4.4E+04	--	--	na	8.8E+04	--	--	--	--	--	--	--	--	--	--	na	8.8E+04
2,4-Dimethylphenol	0	--	--	na	8.5E+02	--	--	na	1.7E+03	--	--	--	--	--	--	--	--	--	--	na	1.7E+03
Dimethyl Phthalate	0	--	--	na	1.1E+06	--	--	na	2.2E+06	--	--	--	--	--	--	--	--	--	--	na	2.2E+06
Di-n-Butyl Phthalate	0	--	--	na	4.5E+03	--	--	na	9.0E+03	--	--	--	--	--	--	--	--	--	--	na	9.0E+03
2,4 Dinitrophenol	0	--	--	na	5.3E+03	--	--	na	1.1E+04	--	--	--	--	--	--	--	--	--	--	na	1.1E+04
2-Methyl-4,6-Dinitrophenol	0	--	--	na	2.8E+02	--	--	na	5.6E+02	--	--	--	--	--	--	--	--	--	--	na	5.6E+02
2,4-Dinitrotoluene [C]	0	--	--	na	3.4E+01	--	--	na	6.8E+01	--	--	--	--	--	--	--	--	--	--	na	6.8E+01
Dioxin 2,3,7,8-tetrachlorodibenzo-p-dioxin	0	--	--	na	5.1E-08	--	--	na	1.0E-07	--	--	--	--	--	--	--	--	--	--	na	1.0E-07
1,2-Diphenylhydrazine[C]	0	--	--	na	2.0E+00	--	--	na	4.0E+00	--	--	--	--	--	--	--	--	--	--	na	4.0E+00
Alpha-Endosulfan	0	2.2E-01	5.6E-02	na	8.9E+01	4.4E-01	1.1E-01	na	1.8E+02	--	--	--	--	--	--	--	--	4.4E-01	1.1E-01	na	1.8E+02
Beta-Endosulfan	0	2.2E-01	5.6E-02	na	8.9E+01	4.4E-01	1.1E-01	na	1.8E+02	--	--	--	--	--	--	--	--	4.4E-01	1.1E-01	na	1.8E+02
Alpha + Beta Endosulfan	0	2.2E-01	5.6E-02	--	--	4.4E-01	1.1E-01	--	--	--	--	--	--	--	--	--	--	4.4E-01	1.1E-01	--	--
Endosulfan Sulfate	0	--	--	na	8.9E+01	--	--	na	1.8E+02	--	--	--	--	--	--	--	--	--	--	na	1.8E+02
Endrin	0	8.6E-02	3.6E-02	na	6.0E-02	1.7E-01	7.2E-02	na	1.2E-01	--	--	--	--	--	--	--	--	1.7E-01	7.2E-02	na	1.2E-01
Endrin Aldehyde	0	--	--	na	3.0E-01	--	--	na	6.0E-01	--	--	--	--	--	--	--	--	--	--	na	6.0E-01

Parameter	Background	Water Quality Criteria				Wasteload Allocations				Antidegradation Baseline				Antidegradation Allocations				**Most Limiting Allocations**			
(ug/l unless noted)	Conc.	Acute	Chronic	HH (PWS)	HH	Acute	Chronic	HH (PWS)	HH	Acute	Chronic	HH (PWS)	HH	Acute	Chronic	HH (PWS)	HH	**Acute**	**Chronic**	**HH (PWS)**	**HH**
Ethylbenzene	0	--	--	na	2.1E+03	--	--	na	4.2E+03	--	--	--	--	--	--	--	--	--	--	na	4.2E+03
Fluoranthene	0	--	--	na	1.4E+02	--	--	na	2.8E+02	--	--	--	--	--	--	--	--	--	--	na	2.8E+02
Fluorene	0	--	--	na	5.3E+03	--	--	na	1.1E+04	--	--	--	--	--	--	--	--	--	--	na	1.1E+04
Foaming Agents	0	--	--	na	--	--	--	na	--	--	--	--	--	--	--	--	--	--	--	na	--
Guthion	0	--	1.0E-02	na	--	--	2.0E-02	na	--	--	--	--	--	--	--	--	--	--	2.0E-02	na	--
Heptachlor [c]	0	5.2E-01	3.8E-03	na	7.9E-04	1.0E+00	7.6E-03	na	1.6E-03	--	--	--	--	--	--	--	--	1.0E+00	7.6E-03	na	1.6E-03
Heptachlor Epoxide[c]	0	5.2E-01	3.8E-03	na	3.9E-04	1.0E+00	7.6E-03	na	7.8E-04	--	--	--	--	--	--	--	--	1.0E+00	7.6E-03	na	7.8E-04
Hexachlorobenzene[c]	0	--	--	na	2.9E-03	--	--	na	5.8E-03	--	--	--	--	--	--	--	--	--	--	na	5.8E-03
Hexachlorobutadiene[c]	0	--	--	na	1.8E+02	--	--	na	3.6E+02	--	--	--	--	--	--	--	--	--	--	na	3.6E+02
Hexachlorocyclohexane Alpha-BHC[c]	0	--	--	na	4.9E-02	--	--	na	9.8E-02	--	--	--	--	--	--	--	--	--	--	na	9.8E-02
Hexachlorocyclohexane Beta-BHC[c]	0	--	--	na	1.7E-01	--	--	na	3.4E-01	--	--	--	--	--	--	--	--	--	--	na	3.4E-01
Hexachlorocyclohexane Gamma-BHC[c] (Lindane)	0	9.5E-01	na	na	1.8E+00	1.9E+00	--	na	3.6E+00	--	--	--	--	--	--	--	--	1.9E+00	--	na	3.6E+00
Hexachlorocyclopentadiene	0	--	--	na	1.1E+03	--	--	na	2.2E+03	--	--	--	--	--	--	--	--	--	--	na	2.2E+03
Hexachloroethane[c]	0	--	--	na	3.3E+01	--	--	na	6.6E+01	--	--	--	--	--	--	--	--	--	--	na	6.6E+01
Hydrogen Sulfide	0	--	2.0E+00	na	--	--	4.0E+00	na	--	--	--	--	--	--	--	--	--	--	4.0E+00	na	--
Indeno (1,2,3-cd) pyrene [c]	0	--	--	na	1.8E-01	--	--	na	3.6E-01	--	--	--	--	--	--	--	--	--	--	na	3.6E-01
Iron	0	--	--	na	--	--	--	na	--	--	--	--	--	--	--	--	--	--	--	na	--
Isophorone[c]	0	--	--	na	9.6E+03	--	--	na	1.9E+04	--	--	--	--	--	--	--	--	--	--	na	1.9E+04
Kepone	0	--	0.0E+00	na	--	--	0.0E+00	na	--	--	--	--	--	--	--	--	--	--	0.0E+00	na	--
Lead	0	9.9E+01	1.1E+01	na	--	2.0E+02	2.2E+01	na	--	--	--	--	--	--	--	--	--	2.0E+02	2.2E+01	na	--
Malathion	0	--	1.0E-01	na	--	--	2.0E-01	na	--	--	--	--	--	--	--	--	--	--	2.0E-01	na	--
Manganese	0	--	--	na	--	--	--	na	--	--	--	--	--	--	--	--	--	--	--	na	--
Mercury	0	1.4E+00	7.7E-01	- -	- -	2.8E+00	1.5E+00	- -	- -	--	--	--	--	--	--	--	--	2.8E+00	1.5E+00	- -	- -
Methyl Bromide	0	--	--	na	1.5E+03	--	--	na	3.0E+03	--	--	--	--	--	--	--	--	--	--	na	3.0E+03
Methylene Chloride [c]	0	--	--	na	5.9E+03	--	--	na	1.2E+04	--	--	--	--	--	--	--	--	--	--	na	1.2E+04
Methoxychlor	0	--	3.0E-02	na	--	--	6.0E-02	na	--	--	--	--	--	--	--	--	--	--	6.0E-02	na	--
Mirex	0	--	0.0E+00	na	--	--	0.0E+00	na	--	--	--	--	--	--	--	--	--	--	0.0E+00	na	--
Nickel	0	1.6E+02	1.8E+01	na	4.6E+03	3.2E+02	3.6E+01	na	9.2E+03	--	--	--	--	--	--	--	--	3.2E+02	3.6E+01	na	9.2E+03
Nitrate (as N)	0	--	--	na	--	--	--	na	--	--	--	--	--	--	--	--	--	--	--	na	--
Nitrobenzene	0	--	--	na	6.9E+02	--	--	na	1.4E+03	--	--	--	--	--	--	--	--	--	--	na	1.4E+03
N-Nitrosodimethylamine[c]	0	--	--	na	3.0E+01	--	--	na	6.0E+01	--	--	--	--	--	--	--	--	--	--	na	6.0E+01
N-Nitrosodiphenylamine[c]	0	--	--	na	6.0E+01	--	--	na	1.2E+02	--	--	--	--	--	--	--	--	--	--	na	1.2E+02
N-Nitrosodi-n-propylamine[c]	0	--	--	na	5.1E+00	--	--	na	1.0E+01	--	--	--	--	--	--	--	--	--	--	na	1.0E+01
Nonylphenol	0	2.8E+01	6.6E+00	--	--	5.6E+01	1.3E+01	na	--	--	--	--	--	--	--	--	--	5.6E+01	1.3E+01	na	--
Parathion	0	6.5E-02	1.3E-02	na	--	1.3E-01	2.6E-02	na	--	--	--	--	--	--	--	--	--	1.3E-01	2.6E-02	na	--
PCB Total[c]	0	--	1.4E-02	na	6.4E-04	--	2.8E-02	na	1.3E-03	--	--	--	--	--	--	--	--	--	2.8E-02	na	1.3E-03
Pentachlorophenol [c]	0	5.0E+00	3.9E+00	na	3.0E+01	1.0E+01	7.7E+00	na	6.0E+01	--	--	--	--	--	--	--	--	1.0E+01	7.7E+00	na	6.0E+01
Phenol	0	--	--	na	8.6E+05	--	--	na	1.7E+06	--	--	--	--	--	--	--	--	--	--	na	1.7E+06
Pyrene	0	--	--	na	4.0E+03	--	--	na	8.0E+03	--	--	--	--	--	--	--	--	--	--	na	8.0E+03
Radionuclides	0	--	--	na	--	--	--	na	--	--	--	--	--	--	--	--	--	--	--	na	--
Gross Alpha Activity (pCi/L)	0	--	--	na	--	--	--	na	--	--	--	--	--	--	--	--	--	--	--	na	--
Beta and Photon Activity (mrem/yr)	0	--	--	na	4.0E+00	--	--	na	8.0E+00	--	--	--	--	--	--	--	--	--	--	na	8.0E+00
Radium 226 + 228 (pCi/L)	0	--	--	na	--	--	--	na	--	--	--	--	--	--	--	--	--	--	--	na	--
Uranium (ug/l)	0	--	--	na	--	--	--	na	--	--	--	--	--	--	--	--	--	--	--	na	--

Parameter	Background	Water Quality Criteria				Wasteload Allocations				Antidegradation Baseline				Antidegradation Allocations				**Most Limiting Allocations**			
(ug/l unless noted)	Conc.	Acute	Chronic	HH (PWS)	HH	Acute	Chronic	HH (PWS)	HH	Acute	Chronic	HH (PWS)	HH	Acute	Chronic	HH (PWS)	HH	**Acute**	**Chronic**	**HH (PWS)**	**HH**
Selenium, Total Recoverable	0	2.0E+01	5.0E+00	na	4.2E+03	4.0E+01	1.0E+01	na	8.4E+03	--	--	--	--	--	--	--	--	**4.0E+01**	**1.0E+01**	**na**	**8.4E+03**
Silver	0	2.7E+00	--	na	--	5.4E+00	--	na	--	--	--	--	--	--	--	--	--	**5.4E+00**	**--**	**na**	**--**
Sulfate	0	--	--	na	--	--	--	na	--	--	--	--	--	--	--	--	--	**--**	**--**	**na**	**--**
1,1,2,2-Tetrachloroethane[C]	0	--	--	na	4.0E+01	--	--	na	8.0E+01	--	--	--	--	--	--	--	--	**--**	**--**	**na**	**8.0E+01**
Tetrachloroethylene[C]	0	--	--	na	3.3E+01	--	--	na	6.6E+01	--	--	--	--	--	--	--	--	**--**	**--**	**na**	**6.6E+01**
Thallium	0	--	--	na	4.7E-01	--	--	na	9.4E-01	--	--	--	--	--	--	--	--	**--**	**--**	**na**	**9.4E-01**
Toluene	0	--	--	na	6.0E+03	--	--	na	1.2E+04	--	--	--	--	--	--	--	--	**--**	**--**	**na**	**1.2E+04**
Total dissolved solids	0	--	--	na	--	--	--	na	--	--	--	--	--	--	--	--	--	**--**	**--**	**na**	**--**
Toxaphene [C]	0	7.3E-01	2.0E-04	na	2.8E-03	1.5E+00	4.0E-04	na	5.6E-03	--	--	--	--	--	--	--	--	**1.5E+00**	**4.0E-04**	**na**	**5.6E-03**
Tributyltin	0	4.6E-01	7.2E-02	na	--	9.2E-01	1.4E-01	na	--	--	--	--	--	--	--	--	--	**9.2E-01**	**1.4E-01**	**na**	**--**
1,2,4-Trichlorobenzene	0	--	--	na	7.0E+01	--	--	na	1.4E+02	--	--	--	--	--	--	--	--	**--**	**--**	**na**	**1.4E+02**
1,1,2-Trichloroethane[C]	0	--	--	na	1.6E+02	--	--	na	3.2E+02	--	--	--	--	--	--	--	--	**--**	**--**	**na**	**3.2E+02**
Trichloroethylene [C]	0	--	--	na	3.0E+02	--	--	na	6.0E+02	--	--	--	--	--	--	--	--	**--**	**--**	**na**	**6.0E+02**
2,4,6-Trichlorophenol [C]	0	--	--	na	2.4E+01	--	--	na	4.8E+01	--	--	--	--	--	--	--	--	**--**	**--**	**na**	**4.8E+01**
2-(2,4,5-Trichlorophenoxy) propionic acid (Silvex)	0	--	--	na	--	--	--	na	--	--	--	--	--	--	--	--	--	**--**	**--**	**na**	**--**
Vinyl Chloride[C]	0	--	--	na	2.4E+01	--	--	na	4.8E+01	--	--	--	--	--	--	--	--	**--**	**--**	**na**	**4.8E+01**
Zinc	0	1.0E+02	1.0E+02	na	2.6E+04	2.1E+02	2.1E+02	na	5.2E+04	--	--	--	--	--	--	--	--	**2.1E+02**	**2.1E+02**	**na**	**5.2E+04**

Notes:

1. All concentrations expressed as micrograms/liter (ug/l), unless noted otherwise
2. Discharge flow is highest monthly average or Form 2C maximum for Industries and design flow for Municipals
3. Metals measured as Dissolved, unless specified otherwise
4. "C" indicates a carcinogenic parameter
5. Regular WLAs are mass balances (minus background concentration) using the % of stream flow entered above under Mixing Information.
   Antidegradation WLAs are based upon a complete mix.
6. Antideg. Baseline = (0.25(WQC - background conc.) + background conc.) for acute and chronic
   = (0.1(WQC - background conc.) + background conc.) for human health
7. WLAs established at the following stream flows: 1Q10 for Acute, 30Q10 for Chronic Ammonia, 7Q10 for Other Chronic, 30Q5 for Non-carcinogens and Harmonic Mean for Carcinogens. To apply mixing ratios from a model set the stream flow equal to (mixing ratio - 1), effluent flow equal to 1 and 100% mix.

Metal	Target Value (SSTV)
Antimony	1.3E+03
Arsenic	1.8E+02
Barium	na
Cadmium	1.2E+00
Chromium III	7.9E+01
Chromium VI	1.3E+01
Copper	9.4E+00
Iron	na
Lead	1.3E+01
Manganese	na
Mercury	9.2E-01
Nickel	2.2E+01
Selenium	6.0E+00
Silver	2.2E+00
Zinc	8.3E+01

Note: do not use QL's lower than the minimum QL's provided in agency guidance

FRESHWATER
WATER QUALITY CRITERIA / WASTELOAD ALLOCATION ANALYSIS

Facility Name: City of Alexandria CSS - Outfall 002 Permit No.: VA0087068

Receiving Stream: Hunting Creek Version: OWP Guidance Memo 00-2011 (8/24/00)

Stream Information

Mean Hardness (as CaCO3) =	106	mg/L
90% Temperature (Annual) =	29	deg C
90% Temperature (Wet season) =	20	deg C
90% Maximum pH =	7.1	SU
10% Maximum pH =	5.6	SU
Tier Designation (1 or 2) =	1	
Public Water Supply (PWS) Y/N? =	n	
Trout Present Y/N? =	n	
Early Life Stages Present Y/N? =	y	

Stream Flows

1Q10 (Annual) =	1	MGD
7Q10 (Annual) =	1	MGD
30Q10 (Annual) =	1	MGD
1Q10 (Wet season) =	1	MGD
30Q10 (Wet season)	1	MGD
30Q5 =	1	MGD
Harmonic Mean =	1	MGD

Mixing Information

Annual - 1Q10 Mix =	100	%
- 7Q10 Mix =	100	%
- 30Q10 Mix =	100	%
Wet Season - 1Q10 Mix =	100	%
- 30Q10 Mix =	100	%

Effluent Information

Mean Hardness (as CaCO3) =	43	mg/L
90% Temp (Annual) =	25.5	deg C
90% Temp (Wet season) =	15	deg C
90% Maximum pH =	6.7	SU
10% Maximum pH =	5.5	SU
Discharge Flow =	1	MGD

Parameter	Background	Water Quality Criteria				Wasteload Allocations				Antidegradation Baseline				Antidegradation Allocations				**Most Limiting Allocations**			
(ug/l unless noted)	Conc.	Acute	Chronic	HH (PWS)	HH	Acute	Chronic	HH (PWS)	HH	Acute	Chronic	HH (PWS)	HH	Acute	Chronic	HH (PWS)	HH	**Acute**	**Chronic**	**HH (PWS)**	**HH**
Acenapthene	0	--	--	na	9.9E+02	--	--	na	2.0E+03	--	--	--	--	--	--	--	--	--	--	na	**2.0E+03**
Acrolein	0	--	--	na	9.3E+00	--	--	na	1.9E+01	--	--	--	--	--	--	--	--	--	--	na	**1.9E+01**
Acrylonitrile[C]	0	--	--	na	2.5E+00	--	--	na	5.0E+00	--	--	--	--	--	--	--	--	--	--	na	**5.0E+00**
Aldrin [C]	0	3.0E+00	--	na	5.0E-04	6.0E+00	--	na	1.0E-03	--	--	--	--	--	--	--	--	**6.0E+00**	--	na	**1.0E-03**
Ammonia-N (mg/l) (Yearly)	0	4.05E+01	2.73E+00	na	--	8.1E+01	5.5E+00	na	--	--	--	--	--	--	--	--	--	**8.1E+01**	**5.5E+00**	na	--
Ammonia-N (mg/l) (High Flow)	0	4.05E+01	5.12E+00	na	--	8.1E+01	1.0E+01	na	--	--	--	--	--	--	--	--	--	**8.1E+01**	**1.0E+01**	na	--
Anthracene	0	--	--	na	4.0E+04	--	--	na	8.0E+04	--	--	--	--	--	--	--	--	--	--	na	**8.0E+04**
Antimony	0	--	--	na	6.4E+02	--	--	na	1.3E+03	--	--	--	--	--	--	--	--	--	--	na	**1.3E+03**
Arsenic	0	3.4E+02	1.5E+02	na	--	6.8E+02	3.0E+02	na	--	--	--	--	--	--	--	--	--	**6.8E+02**	**3.0E+02**	na	--
Barium	0	--	--	na	--	--	--	na	--	--	--	--	--	--	--	--	--	--	--	na	--
Benzene [C]	0	--	--	na	5.1E+02	--	--	na	1.0E+03	--	--	--	--	--	--	--	--	--	--	na	**1.0E+03**
Benzidine[C]	0	--	--	na	2.0E-03	--	--	na	4.0E-03	--	--	--	--	--	--	--	--	--	--	na	**4.0E-03**
Benzo (a) anthracene [C]	0	--	--	na	1.8E-01	--	--	na	3.6E-01	--	--	--	--	--	--	--	--	--	--	na	**3.6E-01**
Benzo (b) fluoranthene [C]	0	--	--	na	1.8E-01	--	--	na	3.6E-01	--	--	--	--	--	--	--	--	--	--	na	**3.6E-01**
Benzo (k) fluoranthene [C]	0	--	--	na	1.8E-01	--	--	na	3.6E-01	--	--	--	--	--	--	--	--	--	--	na	**3.6E-01**
Benzo (a) pyrene [C]	0	--	--	na	1.8E-01	--	--	na	3.6E-01	--	--	--	--	--	--	--	--	--	--	na	**3.6E-01**
Bis2-Chloroethyl Ether [C]	0	--	--	na	5.3E+00	--	--	na	1.1E+01	--	--	--	--	--	--	--	--	--	--	na	**1.1E+01**
Bis2-Chloroisopropyl Ether	0	--	--	na	6.5E+04	--	--	na	1.3E+05	--	--	--	--	--	--	--	--	--	--	na	**1.3E+05**
Bis 2-Ethylhexyl Phthalate [C]	0	--	--	na	2.2E+01	--	--	na	4.4E+01	--	--	--	--	--	--	--	--	--	--	na	**4.4E+01**
Bromoform [C]	0	--	--	na	1.4E+03	--	--	na	2.8E+03	--	--	--	--	--	--	--	--	--	--	na	**2.8E+03**
Butylbenzylphthalate	0	--	--	na	1.9E+03	--	--	na	3.8E+03	--	--	--	--	--	--	--	--	--	--	na	**3.8E+03**
Cadmium	0	2.8E+00	9.0E-01	na	--	5.6E+00	1.8E+00	na	--	--	--	--	--	--	--	--	--	**5.6E+00**	**1.8E+00**	na	--
Carbon Tetrachloride [C]	0	--	--	na	1.6E+01	--	--	na	3.2E+01	--	--	--	--	--	--	--	--	--	--	na	**3.2E+01**
Chlordane [C]	0	2.4E+00	4.3E-03	na	8.1E-03	4.8E+00	8.6E-03	na	1.6E-02	--	--	--	--	--	--	--	--	**4.8E+00**	**8.6E-03**	na	**1.6E-02**
Chloride	0	8.6E+05	2.3E+05	na	--	1.7E+06	4.6E+05	na	--	--	--	--	--	--	--	--	--	**1.7E+06**	**4.6E+05**	na	--
TRC	0	1.9E+01	1.1E+01	na	--	3.8E+01	2.2E+01	na	--	--	--	--	--	--	--	--	--	**3.8E+01**	**2.2E+01**	na	--
Chlorobenzene	0	--	--	na	1.6E+03	--	--	na	3.2E+03	--	--	--	--	--	--	--	--	--	--	na	**3.2E+03**

Parameter	Background	Water Quality Criteria				Wasteload Allocations				Antidegradation Baseline				Antidegradation Allocations				Most Limiting Allocations			
(ug/l unless noted)	Conc.	Acute	Chronic	HH (PWS)	HH	Acute	Chronic	HH (PWS)	HH	Acute	Chronic	HH (PWS)	HH	Acute	Chronic	HH (PWS)	HH	**Acute**	**Chronic**	**HH (PWS)**	**HH**
Chlorodibromomethane[C]	0	--	--	na	1.3E+02	--	--	na	2.6E+02	--	--	--	--	--	--	--	--	--	--	na	2.6E+02
Chloroform	0	--	--	na	1.1E+04	--	--	na	2.2E+04	--	--	--	--	--	--	--	--	--	--	na	2.2E+04
2-Chloronaphthalene	0	--	--	na	1.6E+03	--	--	na	3.2E+03	--	--	--	--	--	--	--	--	--	--	na	3.2E+03
2-Chlorophenol	0	--	--	na	1.5E+02	--	--	na	3.0E+02	--	--	--	--	--	--	--	--	--	--	na	3.0E+02
Chlorpyrifos	0	8.3E-02	4.1E-02	na	--	1.7E-01	8.2E-02	na	--	--	--	--	--	--	--	--	--	1.7E-01	8.2E-02	na	--
Chromium III	0	4.5E+02	5.8E+01	na	--	9.0E+02	1.2E+02	na	--	--	--	--	--	--	--	--	--	9.0E+02	1.2E+02	na	--
Chromium VI	0	1.6E+01	1.1E+01	na	--	3.2E+01	2.2E+01	na	--	--	--	--	--	--	--	--	--	3.2E+01	2.2E+01	na	--
Chromium, Total	0	--	--	1.0E+02	--	--	--	na	--	--	--	--	--	--	--	--	--	--	--	na	--
Chrysene [C]	0	--	--	na	1.8E-02	--	--	na	3.6E-02	--	--	--	--	--	--	--	--	--	--	na	3.6E-02
Copper	0	1.0E+01	7.0E+00	na	--	2.0E+01	1.4E+01	na	--	--	--	--	--	--	--	--	--	2.0E+01	1.4E+01	na	--
Cyanide, Free	0	2.2E+01	5.2E+00	na	1.6E+04	4.4E+01	1.0E+01	na	3.2E+04	--	--	--	--	--	--	--	--	4.4E+01	1.0E+01	na	3.2E+04
DDD [C]	0	--	--	na	3.1E-03	--	--	na	6.2E-03	--	--	--	--	--	--	--	--	--	--	na	6.2E-03
DDE [C]	0	--	--	na	2.2E-03	--	--	na	4.4E-03	--	--	--	--	--	--	--	--	--	--	na	4.4E-03
DDT [C]	0	1.1E+00	1.0E-03	na	2.2E-03	2.2E+00	2.0E-03	na	4.4E-03	--	--	--	--	--	--	--	--	2.2E+00	2.0E-03	na	4.4E-03
Demeton	0	--	1.0E-01	na	--	--	2.0E-01	na	--	--	--	--	--	--	--	--	--	--	2.0E-01	na	--
Diazinon	0	1.7E-01	1.7E-01	na	--	3.4E-01	3.4E-01	na	--	--	--	--	--	--	--	--	--	3.4E-01	3.4E-01	na	--
Dibenz(a,h)anthracene [C]	0	--	--	na	1.8E-01	--	--	na	3.6E-01	--	--	--	--	--	--	--	--	--	--	na	3.6E-01
1,2-Dichlorobenzene	0	--	--	na	1.3E+03	--	--	na	2.6E+03	--	--	--	--	--	--	--	--	--	--	na	2.6E+03
1,3-Dichlorobenzene	0	--	--	na	9.6E+02	--	--	na	1.9E+03	--	--	--	--	--	--	--	--	--	--	na	1.9E+03
1,4-Dichlorobenzene	0	--	--	na	1.9E+02	--	--	na	3.8E+02	--	--	--	--	--	--	--	--	--	--	na	3.8E+02
3,3-Dichlorobenzidine[C]	0	--	--	na	2.8E-01	--	--	na	5.6E-01	--	--	--	--	--	--	--	--	--	--	na	5.6E-01
Dichlorobromomethane [C]	0	--	--	na	1.7E+02	--	--	na	3.4E+02	--	--	--	--	--	--	--	--	--	--	na	3.4E+02
1,2-Dichloroethane [C]	0	--	--	na	3.7E+02	--	--	na	7.4E+02	--	--	--	--	--	--	--	--	--	--	na	7.4E+02
1,1-Dichloroethylene	0	--	--	na	7.1E+03	--	--	na	1.4E+04	--	--	--	--	--	--	--	--	--	--	na	1.4E+04
1,2-trans-dichloroethylene	0	--	--	na	1.0E+04	--	--	na	2.0E+04	--	--	--	--	--	--	--	--	--	--	na	2.0E+04
2,4-Dichlorophenol	0	--	--	na	2.9E+02	--	--	na	5.8E+02	--	--	--	--	--	--	--	--	--	--	na	5.8E+02
2,4-Dichlorophenoxy acetic acid (2,4-D)	0	--	--	na	--	--	--	na	--	--	--	--	--	--	--	--	--	--	--	na	--
1,2-Dichloropropane[C]	0	--	--	na	1.5E+02	--	--	na	3.0E+02	--	--	--	--	--	--	--	--	--	--	na	3.0E+02
1,3-Dichloropropene [C]	0	--	--	na	2.1E+02	--	--	na	4.2E+02	--	--	--	--	--	--	--	--	--	--	na	4.2E+02
Dieldrin [C]	0	2.4E-01	5.6E-02	na	5.4E-04	4.8E-01	1.1E-01	na	1.1E-03	--	--	--	--	--	--	--	--	4.8E-01	1.1E-01	na	1.1E-03
Diethyl Phthalate	0	--	--	na	4.4E+04	--	--	na	8.8E+04	--	--	--	--	--	--	--	--	--	--	na	8.8E+04
2,4-Dimethylphenol	0	--	--	na	8.5E+02	--	--	na	1.7E+03	--	--	--	--	--	--	--	--	--	--	na	1.7E+03
Dimethyl Phthalate	0	--	--	na	1.1E+06	--	--	na	2.2E+06	--	--	--	--	--	--	--	--	--	--	na	2.2E+06
Di-n-Butyl Phthalate	0	--	--	na	4.5E+03	--	--	na	9.0E+03	--	--	--	--	--	--	--	--	--	--	na	9.0E+03
2,4 Dinitrophenol	0	--	--	na	5.3E+03	--	--	na	1.1E+04	--	--	--	--	--	--	--	--	--	--	na	1.1E+04
2-Methyl-4,6-Dinitrophenol	0	--	--	na	2.8E+02	--	--	na	5.6E+02	--	--	--	--	--	--	--	--	--	--	na	5.6E+02
2,4-Dinitrotoluene [C]	0	--	--	na	3.4E+01	--	--	na	6.8E+01	--	--	--	--	--	--	--	--	--	--	na	6.8E+01
Dioxin 2,3,7,8-tetrachlorodibenzo-p-dioxin	0	--	--	na	5.1E-08	--	--	na	1.0E-07	--	--	--	--	--	--	--	--	--	--	na	1.0E-07
1,2-Diphenylhydrazine[C]	0	--	--	na	2.0E+00	--	--	na	4.0E+00	--	--	--	--	--	--	--	--	--	--	na	4.0E+00
Alpha-Endosulfan	0	2.2E-01	5.6E-02	na	8.9E+01	4.4E-01	1.1E-01	na	1.8E+02	--	--	--	--	--	--	--	--	4.4E-01	1.1E-01	na	1.8E+02
Beta-Endosulfan	0	2.2E-01	5.6E-02	na	8.9E+01	4.4E-01	1.1E-01	na	1.8E+02	--	--	--	--	--	--	--	--	4.4E-01	1.1E-01	na	1.8E+02
Alpha + Beta Endosulfan	0	2.2E-01	5.6E-02	--	--	4.4E-01	1.1E-01	--	--	--	--	--	--	--	--	--	--	4.4E-01	1.1E-01	--	--
Endosulfan Sulfate	0	--	--	na	8.9E+01	--	--	na	1.8E+02	--	--	--	--	--	--	--	--	--	--	na	1.8E+02
Endrin	0	8.6E-02	3.6E-02	na	6.0E-02	1.7E-01	7.2E-02	na	1.2E-01	--	--	--	--	--	--	--	--	1.7E-01	7.2E-02	na	1.2E-01
Endrin Aldehyde	0	--	--	na	3.0E-01	--	--	na	6.0E-01	--	--	--	--	--	--	--	--	--	--	na	6.0E-01

Parameter	Background	Water Quality Criteria				Wasteload Allocations				Antidegradation Baseline				Antidegradation Allocations				Most Limiting Allocations			
(ug/l unless noted)	Conc.	Acute	Chronic	HH (PWS)	HH	Acute	Chronic	HH (PWS)	HH	Acute	Chronic	HH (PWS)	HH	Acute	Chronic	HH (PWS)	HH	**Acute**	**Chronic**	**HH (PWS)**	**HH**
Ethylbenzene	0	--	--	na	2.1E+03	--	--	na	4.2E+03	--	--	--	--	--	--	--	--	--	--	na	4.2E+03
Fluoranthene	0	--	--	na	1.4E+02	--	--	na	2.8E+02	--	--	--	--	--	--	--	--	--	--	na	2.8E+02
Fluorene	0	--	--	na	5.3E+03	--	--	na	1.1E+04	--	--	--	--	--	--	--	--	--	--	na	1.1E+04
Foaming Agents	0	--	--	na	--	--	--	na	--	--	--	--	--	--	--	--	--	--	--	na	--
Guthion	0	--	1.0E-02	na	--	--	2.0E-02	na	--	--	--	--	--	--	--	--	--	--	2.0E-02	na	--
Heptachlor [c]	0	5.2E-01	3.8E-03	na	7.9E-04	1.0E+00	7.6E-03	na	1.6E-03	--	--	--	--	--	--	--	--	1.0E+00	7.6E-03	na	1.6E-03
Heptachlor Epoxide[c]	0	5.2E-01	3.8E-03	na	3.9E-04	1.0E+00	7.6E-03	na	7.8E-04	--	--	--	--	--	--	--	--	1.0E+00	7.6E-03	na	7.8E-04
Hexachlorobenzene[c]	0	--	--	na	2.9E-03	--	--	na	5.8E-03	--	--	--	--	--	--	--	--	--	--	na	5.8E-03
Hexachlorobutadiene[c]	0	--	--	na	1.8E+02	--	--	na	3.6E+02	--	--	--	--	--	--	--	--	--	--	na	3.6E+02
Hexachlorocyclohexane Alpha-BHC[c]	0	--	--	na	4.9E-02	--	--	na	9.8E-02	--	--	--	--	--	--	--	--	--	--	na	9.8E-02
Hexachlorocyclohexane Beta-BHC[c]	0	--	--	na	1.7E-01	--	--	na	3.4E-01	--	--	--	--	--	--	--	--	--	--	na	3.4E-01
Hexachlorocyclohexane Gamma-BHC[c] (Lindane)	0	9.5E-01	na	na	1.8E+00	1.9E+00	--	na	3.6E+00	--	--	--	--	--	--	--	--	1.9E+00	--	na	3.6E+00
Hexachlorocyclopentadiene	0	--	--	na	1.1E+03	--	--	na	2.2E+03	--	--	--	--	--	--	--	--	--	--	na	2.2E+03
Hexachloroethane[c]	0	--	--	na	3.3E+01	--	--	na	6.6E+01	--	--	--	--	--	--	--	--	--	--	na	6.6E+01
Hydrogen Sulfide	0	--	2.0E+00	na	--	--	4.0E+00	na	--	--	--	--	--	--	--	--	--	--	4.0E+00	na	--
Indeno (1,2,3-cd) pyrene [c]	0	--	--	na	1.8E-01	--	--	na	3.6E-01	--	--	--	--	--	--	--	--	--	--	na	3.6E-01
Iron	0	--	--	na	--	--	--	na	--	--	--	--	--	--	--	--	--	--	--	na	--
Isophorone[c]	0	--	--	na	9.6E+03	--	--	na	1.9E+04	--	--	--	--	--	--	--	--	--	--	na	1.9E+04
Kepone	0	--	0.0E+00	na	--	--	0.0E+00	na	--	--	--	--	--	--	--	--	--	--	0.0E+00	na	--
Lead	0	8.2E+01	9.3E+00	na	--	1.6E+02	1.9E+01	na	--	--	--	--	--	--	--	--	--	1.6E+02	1.9E+01	na	--
Malathion	0	--	1.0E-01	na	--	--	2.0E-01	na	--	--	--	--	--	--	--	--	--	--	2.0E-01	na	--
Manganese	0	--	--	na	--	--	--	na	--	--	--	--	--	--	--	--	--	--	--	na	--
Mercury	0	1.4E+00	7.7E-01	- -	- -	2.8E+00	1.5E+00	- -	- -	--	--	--	--	--	--	--	--	2.8E+00	1.5E+00	- -	- -
Methyl Bromide	0	--	--	na	1.5E+03	--	--	na	3.0E+03	--	--	--	--	--	--	--	--	--	--	na	3.0E+03
Methylene Chloride [c]	0	--	--	na	5.9E+03	--	--	na	1.2E+04	--	--	--	--	--	--	--	--	--	--	na	1.2E+04
Methoxychlor	0	--	3.0E-02	na	--	--	6.0E-02	na	--	--	--	--	--	--	--	--	--	--	6.0E-02	na	--
Mirex	0	--	0.0E+00	na	--	--	0.0E+00	na	--	--	--	--	--	--	--	--	--	--	0.0E+00	na	--
Nickel	0	1.4E+02	1.6E+01	na	4.6E+03	2.8E+02	3.2E+01	na	9.2E+03	--	--	--	--	--	--	--	--	2.8E+02	3.2E+01	na	9.2E+03
Nitrate (as N)	0	--	--	na	--	--	--	na	--	--	--	--	--	--	--	--	--	--	--	na	--
Nitrobenzene	0	--	--	na	6.9E+02	--	--	na	1.4E+03	--	--	--	--	--	--	--	--	--	--	na	1.4E+03
N-Nitrosodimethylamine[c]	0	--	--	na	3.0E+01	--	--	na	6.0E+01	--	--	--	--	--	--	--	--	--	--	na	6.0E+01
N-Nitrosodiphenylamine[c]	0	--	--	na	6.0E+01	--	--	na	1.2E+02	--	--	--	--	--	--	--	--	--	--	na	1.2E+02
N-Nitrosodi-n-propylamine[c]	0	--	--	na	5.1E+00	--	--	na	1.0E+01	--	--	--	--	--	--	--	--	--	--	na	1.0E+01
Nonylphenol	0	2.8E+01	6.6E+00	--	--	5.6E+01	1.3E+01	na	--	--	--	--	--	--	--	--	--	5.6E+01	1.3E+01	na	--
Parathion	0	6.5E-02	1.3E-02	na	--	1.3E-01	2.6E-02	na	--	--	--	--	--	--	--	--	--	1.3E-01	2.6E-02	na	--
PCB Total[c]	0	--	1.4E-02	na	6.4E-04	--	2.8E-02	na	1.3E-03	--	--	--	--	--	--	--	--	--	2.8E-02	na	1.3E-03
Pentachlorophenol [c]	0	2.0E+00	1.6E+00	na	3.0E+01	4.1E+00	3.1E+00	na	6.0E+01	--	--	--	--	--	--	--	--	4.1E+00	3.1E+00	na	6.0E+01
Phenol	0	--	--	na	8.6E+05	--	--	na	1.7E+06	--	--	--	--	--	--	--	--	--	--	na	1.7E+06
Pyrene	0	--	--	na	4.0E+03	--	--	na	8.0E+03	--	--	--	--	--	--	--	--	--	--	na	8.0E+03
Radionuclides	0	--	--	na	--	--	--	na	--	--	--	--	--	--	--	--	--	--	--	na	--
Gross Alpha Activity (pCi/L)	0	--	--	na	--	--	--	na	--	--	--	--	--	--	--	--	--	--	--	na	--
Beta and Photon Activity (mrem/yr)	0	--	--	na	4.0E+00	--	--	na	8.0E+00	--	--	--	--	--	--	--	--	--	--	na	8.0E+00
Radium 226 + 228 (pCi/L)	0	--	--	na	--	--	--	na	--	--	--	--	--	--	--	--	--	--	--	na	--
Uranium (ug/l)	0	--	--	na	--	--	--	na	--	--	--	--	--	--	--	--	--	--	--	na	--

Parameter	Background	Water Quality Criteria				Wasteload Allocations				Antidegradation Baseline				Antidegradation Allocations				Most Limiting Allocations			
(ug/l unless noted)	Conc.	Acute	Chronic	HH (PWS)	HH	Acute	Chronic	HH (PWS)	HH	Acute	Chronic	HH (PWS)	HH	Acute	Chronic	HH (PWS)	HH	**Acute**	**Chronic**	**HH (PWS)**	**HH**
Selenium, Total Recoverable	0	2.0E+01	5.0E+00	na	4.2E+03	4.0E+01	1.0E+01	na	8.4E+03	--	--	--	--	--	--	--	--	**4.0E+01**	**1.0E+01**	**na**	**8.4E+03**
Silver	0	2.1E+00	--	na	--	4.2E+00	--	na	--	--	--	--	--	--	--	--	--	**4.2E+00**	**--**	**na**	**--**
Sulfate	0	--	--	na	--	--	--	na	--	--	--	--	--	--	--	--	--	**--**	**--**	**na**	**--**
1,1,2,2-Tetrachloroethane[C]	0	--	--	na	4.0E+01	--	--	na	8.0E+01	--	--	--	--	--	--	--	--	**--**	**--**	**na**	**8.0E+01**
Tetrachloroethylene[C]	0	--	--	na	3.3E+01	--	--	na	6.6E+01	--	--	--	--	--	--	--	--	**--**	**--**	**na**	**6.6E+01**
Thallium	0	--	--	na	4.7E-01	--	--	na	9.4E-01	--	--	--	--	--	--	--	--	**--**	**--**	**na**	**9.4E-01**
Toluene	0	--	--	na	6.0E+03	--	--	na	1.2E+04	--	--	--	--	--	--	--	--	**--**	**--**	**na**	**1.2E+04**
Total dissolved solids	0	--	--	na	--	--	--	na	--	--	--	--	--	--	--	--	--	**--**	**--**	**na**	**--**
Toxaphene [C]	0	7.3E-01	2.0E-04	na	2.8E-03	1.5E+00	4.0E-04	na	5.6E-03	--	--	--	--	--	--	--	--	**1.5E+00**	**4.0E-04**	**na**	**5.6E-03**
Tributyltin	0	4.6E-01	7.2E-02	na	--	9.2E-01	1.4E-01	na	--	--	--	--	--	--	--	--	--	**9.2E-01**	**1.4E-01**	**na**	**--**
1,2,4-Trichlorobenzene	0	--	--	na	7.0E+01	--	--	na	1.4E+02	--	--	--	--	--	--	--	--	**--**	**--**	**na**	**1.4E+02**
1,1,2-Trichloroethane[C]	0	--	--	na	1.6E+02	--	--	na	3.2E+02	--	--	--	--	--	--	--	--	**--**	**--**	**na**	**3.2E+02**
Trichloroethylene [C]	0	--	--	na	3.0E+02	--	--	na	6.0E+02	--	--	--	--	--	--	--	--	**--**	**--**	**na**	**6.0E+02**
2,4,6-Trichlorophenol [C]	0	--	--	na	2.4E+01	--	--	na	4.8E+01	--	--	--	--	--	--	--	--	**--**	**--**	**na**	**4.8E+01**
2-(2,4,5-Trichlorophenoxy) propionic acid (Silvex)	0	--	--	na	--	--	--	na	--	--	--	--	--	--	--	--	--	**--**	**--**	**na**	**--**
Vinyl Chloride[C]	0	--	--	na	2.4E+01	--	--	na	4.8E+01	--	--	--	--	--	--	--	--	**--**	**--**	**na**	**4.8E+01**
Zinc	0	9.1E+01	9.2E+01	na	2.6E+04	1.8E+02	1.8E+02	na	5.2E+04	--	--	--	--	--	--	--	--	**1.8E+02**	**1.8E+02**	**na**	**5.2E+04**

Notes:

1. All concentrations expressed as micrograms/liter (ug/l), unless noted otherwise
2. Discharge flow is highest monthly average or Form 2C maximum for Industries and design flow for Municipals
3. Metals measured as Dissolved, unless specified otherwise
4. "C" indicates a carcinogenic parameter
5. Regular WLAs are mass balances (minus background concentration) using the % of stream flow entered above under Mixing Information.
   Antidegradation WLAs are based upon a complete mix.
6. Antideg. Baseline = (0.25(WQC - background conc.) + background conc.) for acute and chronic
   = (0.1(WQC - background conc.) + background conc.) for human health
7. WLAs established at the following stream flows: 1Q10 for Acute, 30Q10 for Chronic Ammonia, 7Q10 for Other Chronic, 30Q5 for Non-carcinogens and Harmonic Mean for Carcinogens. To apply mixing ratios from a model set the stream flow equal to (mixing ratio - 1), effluent flow equal to 1 and 100% mix.

Metal	Target Value (SSTV)
Antimony	1.3E+03
Arsenic	1.8E+02
Barium	na
Cadmium	1.1E+00
Chromium III	7.0E+01
Chromium VI	1.3E+01
Copper	8.1E+00
Iron	na
Lead	1.1E+01
Manganese	na
Mercury	9.2E-01
Nickel	1.9E+01
Selenium	6.0E+00
Silver	1.7E+00
Zinc	7.3E+01

Note: do not use QL's lower than the minimum QL's provided in agency guidance

FRESHWATER
WATER QUALITY CRITERIA / WASTELOAD ALLOCATION ANALYSIS

Facility Name: City of Alexandria CSS - Outfall 003 Permit No.: VA0087068

Receiving Stream: Hooffs Run Version: OWP Guidance Memo 00-2011 (8/24/00)

Stream Information			Stream Flows			Mixing Information			Effluent Information		
Mean Hardness (as CaCO3) =	106	mg/L	1Q10 (Annual) =	1	MGD	Annual - 1Q10 Mix =	100	%	Mean Hardness (as CaCO3) =	149	mg/L
90% Temperature (Annual) =	29	deg C	7Q10 (Annual) =	1	MGD	- 7Q10 Mix =	100	%	90% Temp (Annual) =	26.8	deg C
90% Temperature (Wet season) =	20	deg C	30Q10 (Annual) =	1	MGD	- 30Q10 Mix =	100	%	90% Temp (Wet season) =	15	deg C
90% Maximum pH =	7.1	SU	1Q10 (Wet season) =	1	MGD	Wet Season - 1Q10 Mix =	100	%	90% Maximum pH =	7	SU
10% Maximum pH =	5.6	SU	30Q10 (Wet season)	1	MGD	- 30Q10 Mix =	100	%	10% Maximum pH =	6	SU
Tier Designation (1 or 2) =	1		30Q5 =	1	MGD				Discharge Flow =	1	MGD
Public Water Supply (PWS) Y/N? =	n		Harmonic Mean =	1	MGD						
Trout Present Y/N? =	n										
Early Life Stages Present Y/N? =	y										

Parameter	Background	Water Quality Criteria				Wasteload Allocations				Antidegradation Baseline				Antidegradation Allocations				Most Limiting Allocations			
(ug/l unless noted)	Conc.	Acute	Chronic	HH (PWS)	HH	Acute	Chronic	HH (PWS)	HH	Acute	Chronic	HH (PWS)	HH	Acute	Chronic	HH (PWS)	HH	Acute	Chronic	HH (PWS)	HH
Acenapthene	0	--	--	na	9.9E+02	--	--	na	2.0E+03	--	--	--	--	--	--	--	--	--	--	na	2.0E+03
Acrolein	0	--	--	na	9.3E+00	--	--	na	1.9E+01	--	--	--	--	--	--	--	--	--	--	na	1.9E+01
Acrylonitrile[C]	0	--	--	na	2.5E+00	--	--	na	5.0E+00	--	--	--	--	--	--	--	--	--	--	na	5.0E+00
Aldrin [C]	0	3.0E+00	--	na	5.0E-04	6.0E+00	--	na	1.0E-03	--	--	--	--	--	--	--	--	6.0E+00	--	na	1.0E-03
Ammonia-N (mg/l) (Yearly)	0	3.46E+01	2.45E+00	na	--	6.9E+01	4.9E+00	na	--	--	--	--	--	--	--	--	--	6.9E+01	4.9E+00	na	--
Ammonia-N (mg/l) (High Flow)	0	3.46E+01	4.79E+00	na	--	6.9E+01	9.6E+00	na	--	--	--	--	--	--	--	--	--	6.9E+01	9.6E+00	na	--
Anthracene	0	--	--	na	4.0E+04	--	--	na	8.0E+04	--	--	--	--	--	--	--	--	--	--	na	8.0E+04
Antimony	0	--	--	na	6.4E+02	--	--	na	1.3E+03	--	--	--	--	--	--	--	--	--	--	na	1.3E+03
Arsenic	0	3.4E+02	1.5E+02	na	--	6.8E+02	3.0E+02	na	--	--	--	--	--	--	--	--	--	6.8E+02	3.0E+02	na	--
Barium	0	--	--	na	--	--	--	na	--	--	--	--	--	--	--	--	--	--	--	na	--
Benzene [C]	0	--	--	na	5.1E+02	--	--	na	1.0E+03	--	--	--	--	--	--	--	--	--	--	na	1.0E+03
Benzidine[C]	0	--	--	na	2.0E-03	--	--	na	4.0E-03	--	--	--	--	--	--	--	--	--	--	na	4.0E-03
Benzo (a) anthracene [C]	0	--	--	na	1.8E-01	--	--	na	3.6E-01	--	--	--	--	--	--	--	--	--	--	na	3.6E-01
Benzo (b) fluoranthene [C]	0	--	--	na	1.8E-01	--	--	na	3.6E-01	--	--	--	--	--	--	--	--	--	--	na	3.6E-01
Benzo (k) fluoranthene [C]	0	--	--	na	1.8E-01	--	--	na	3.6E-01	--	--	--	--	--	--	--	--	--	--	na	3.6E-01
Benzo (a) pyrene [C]	0	--	--	na	1.8E-01	--	--	na	3.6E-01	--	--	--	--	--	--	--	--	--	--	na	3.6E-01
Bis2-Chloroethyl Ether [C]	0	--	--	na	5.3E+00	--	--	na	1.1E+01	--	--	--	--	--	--	--	--	--	--	na	1.1E+01
Bis2-Chloroisopropyl Ether	0	--	--	na	6.5E+04	--	--	na	1.3E+05	--	--	--	--	--	--	--	--	--	--	na	1.3E+05
Bis 2-Ethylhexyl Phthalate [C]	0	--	--	na	2.2E+01	--	--	na	4.4E+01	--	--	--	--	--	--	--	--	--	--	na	4.4E+01
Bromoform [C]	0	--	--	na	1.4E+03	--	--	na	2.8E+03	--	--	--	--	--	--	--	--	--	--	na	2.8E+03
Butylbenzylphthalate	0	--	--	na	1.9E+03	--	--	na	3.8E+03	--	--	--	--	--	--	--	--	--	--	na	3.8E+03
Cadmium	0	5.2E+00	1.4E+00	na	--	1.0E+01	2.7E+00	na	--	--	--	--	--	--	--	--	--	1.0E+01	2.7E+00	na	--
Carbon Tetrachloride [C]	0	--	--	na	1.6E+01	--	--	na	3.2E+01	--	--	--	--	--	--	--	--	--	--	na	3.2E+01
Chlordane [C]	0	2.4E+00	4.3E-03	na	8.1E-03	4.8E+00	8.6E-03	na	1.6E-02	--	--	--	--	--	--	--	--	4.8E+00	8.6E-03	na	1.6E-02
Chloride	0	8.6E+05	2.3E+05	na	--	1.7E+06	4.6E+05	na	--	--	--	--	--	--	--	--	--	1.7E+06	4.6E+05	na	--
TRC	0	1.9E+01	1.1E+01	na	--	3.8E+01	2.2E+01	na	--	--	--	--	--	--	--	--	--	3.8E+01	2.2E+01	na	--
Chlorobenzene	0	--	--	na	1.6E+03	--	--	na	3.2E+03	--	--	--	--	--	--	--	--	--	--	na	3.2E+03

Parameter	Background	Water Quality Criteria				Wasteload Allocations				Antidegradation Baseline				Antidegradation Allocations				**Most Limiting Allocations**			
(ug/l unless noted)	Conc.	Acute	Chronic	HH (PWS)	HH	Acute	Chronic	HH (PWS)	HH	Acute	Chronic	HH (PWS)	HH	Acute	Chronic	HH (PWS)	HH	**Acute**	**Chronic**	**HH (PWS)**	**HH**
Chlorodibromomethane[C]	0	--	--	na	1.3E+02	--	--	na	2.6E+02	--	--	--	--	--	--	--	--	--	--	na	**2.6E+02**
Chloroform	0	--	--	na	1.1E+04	--	--	na	2.2E+04	--	--	--	--	--	--	--	--	--	--	na	**2.2E+04**
2-Chloronaphthalene	0	--	--	na	1.6E+03	--	--	na	3.2E+03	--	--	--	--	--	--	--	--	--	--	na	**3.2E+03**
2-Chlorophenol	0	--	--	na	1.5E+02	--	--	na	3.0E+02	--	--	--	--	--	--	--	--	--	--	na	**3.0E+02**
Chlorpyrifos	0	8.3E-02	4.1E-02	na	--	1.7E-01	8.2E-02	na	--	--	--	--	--	--	--	--	--	**1.7E-01**	**8.2E-02**	na	--
Chromium III	0	7.0E+02	9.0E+01	na	--	1.4E+03	1.8E+02	na	--	--	--	--	--	--	--	--	--	**1.4E+03**	**1.8E+02**	na	--
Chromium VI	0	1.6E+01	1.1E+01	na	--	3.2E+01	2.2E+01	na	--	--	--	--	--	--	--	--	--	**3.2E+01**	**2.2E+01**	na	--
Chromium, Total	0	--	--	1.0E+02	--	--	--	na	--	--	--	--	--	--	--	--	--	--	--	na	--
Chrysene [C]	0	--	--	na	1.8E-02	--	--	na	3.6E-02	--	--	--	--	--	--	--	--	--	--	na	**3.6E-02**
Copper	0	1.7E+01	1.1E+01	na	--	3.4E+01	2.2E+01	na	--	--	--	--	--	--	--	--	--	**3.4E+01**	**2.2E+01**	na	--
Cyanide, Free	0	2.2E+01	5.2E+00	na	1.6E+04	4.4E+01	1.0E+01	na	3.2E+04	--	--	--	--	--	--	--	--	**4.4E+01**	**1.0E+01**	na	**3.2E+04**
DDD [C]	0	--	--	na	3.1E-03	--	--	na	6.2E-03	--	--	--	--	--	--	--	--	--	--	na	**6.2E-03**
DDE [C]	0	--	--	na	2.2E-03	--	--	na	4.4E-03	--	--	--	--	--	--	--	--	--	--	na	**4.4E-03**
DDT [C]	0	1.1E+00	1.0E-03	na	2.2E-03	2.2E+00	2.0E-03	na	4.4E-03	--	--	--	--	--	--	--	--	**2.2E+00**	**2.0E-03**	na	**4.4E-03**
Demeton	0	--	1.0E-01	na	--	--	2.0E-01	na	--	--	--	--	--	--	--	--	--	--	**2.0E-01**	na	--
Diazinon	0	1.7E-01	1.7E-01	na	--	3.4E-01	3.4E-01	na	--	--	--	--	--	--	--	--	--	**3.4E-01**	**3.4E-01**	na	--
Dibenz(a,h)anthracene [C]	0	--	--	na	1.8E-01	--	--	na	3.6E-01	--	--	--	--	--	--	--	--	--	--	na	**3.6E-01**
1,2-Dichlorobenzene	0	--	--	na	1.3E+03	--	--	na	2.6E+03	--	--	--	--	--	--	--	--	--	--	na	**2.6E+03**
1,3-Dichlorobenzene	0	--	--	na	9.6E+02	--	--	na	1.9E+03	--	--	--	--	--	--	--	--	--	--	na	**1.9E+03**
1,4-Dichlorobenzene	0	--	--	na	1.9E+02	--	--	na	3.8E+02	--	--	--	--	--	--	--	--	--	--	na	**3.8E+02**
3,3-Dichlorobenzidine[C]	0	--	--	na	2.8E-01	--	--	na	5.6E-01	--	--	--	--	--	--	--	--	--	--	na	**5.6E-01**
Dichlorobromomethane [C]	0	--	--	na	1.7E+02	--	--	na	3.4E+02	--	--	--	--	--	--	--	--	--	--	na	**3.4E+02**
1,2-Dichloroethane [C]	0	--	--	na	3.7E+02	--	--	na	7.4E+02	--	--	--	--	--	--	--	--	--	--	na	**7.4E+02**
1,1-Dichloroethylene	0	--	--	na	7.1E+03	--	--	na	1.4E+04	--	--	--	--	--	--	--	--	--	--	na	**1.4E+04**
1,2-trans-dichloroethylene	0	--	--	na	1.0E+04	--	--	na	2.0E+04	--	--	--	--	--	--	--	--	--	--	na	**2.0E+04**
2,4-Dichlorophenol	0	--	--	na	2.9E+02	--	--	na	5.8E+02	--	--	--	--	--	--	--	--	--	--	na	**5.8E+02**
2,4-Dichlorophenoxy acetic acid (2.4-D)	0	--	--	na	--	--	--	na	--	--	--	--	--	--	--	--	--	--	--	na	--
1,2-Dichloropropane[C]	0	--	--	na	1.5E+02	--	--	na	3.0E+02	--	--	--	--	--	--	--	--	--	--	na	**3.0E+02**
1,3-Dichloropropene [C]	0	--	--	na	2.1E+02	--	--	na	4.2E+02	--	--	--	--	--	--	--	--	--	--	na	**4.2E+02**
Dieldrin [C]	0	2.4E-01	5.6E-02	na	5.4E-04	4.8E-01	1.1E-01	na	1.1E-03	--	--	--	--	--	--	--	--	**4.8E-01**	**1.1E-01**	na	**1.1E-03**
Diethyl Phthalate	0	--	--	na	4.4E+04	--	--	na	8.8E+04	--	--	--	--	--	--	--	--	--	--	na	**8.8E+04**
2,4-Dimethylphenol	0	--	--	na	8.5E+02	--	--	na	1.7E+03	--	--	--	--	--	--	--	--	--	--	na	**1.7E+03**
Dimethyl Phthalate	0	--	--	na	1.1E+06	--	--	na	2.2E+06	--	--	--	--	--	--	--	--	--	--	na	**2.2E+06**
Di-n-Butyl Phthalate	0	--	--	na	4.5E+03	--	--	na	9.0E+03	--	--	--	--	--	--	--	--	--	--	na	**9.0E+03**
2,4 Dinitrophenol	0	--	--	na	5.3E+03	--	--	na	1.1E+04	--	--	--	--	--	--	--	--	--	--	na	**1.1E+04**
2-Methyl-4,6-Dinitrophenol	0	--	--	na	2.8E+02	--	--	na	5.6E+02	--	--	--	--	--	--	--	--	--	--	na	**5.6E+02**
2,4-Dinitrotoluene [C]	0	--	--	na	3.4E+01	--	--	na	6.8E+01	--	--	--	--	--	--	--	--	--	--	na	**6.8E+01**
Dioxin 2,3,7,8-tetrachlorodibenzo-p-dioxin	0	--	--	na	5.1E-08	--	--	na	1.0E-07	--	--	--	--	--	--	--	--	--	--	na	**1.0E-07**
1,2-Diphenylhydrazine[C]	0	--	--	na	2.0E+00	--	--	na	4.0E+00	--	--	--	--	--	--	--	--	--	--	na	**4.0E+00**
Alpha-Endosulfan	0	2.2E-01	5.6E-02	na	8.9E+01	4.4E-01	1.1E-01	na	1.8E+02	--	--	--	--	--	--	--	--	**4.4E-01**	**1.1E-01**	na	**1.8E+02**
Beta-Endosulfan	0	2.2E-01	5.6E-02	na	8.9E+01	4.4E-01	1.1E-01	na	1.8E+02	--	--	--	--	--	--	--	--	**4.4E-01**	**1.1E-01**	na	**1.8E+02**
Alpha + Beta Endosulfan	0	2.2E-01	5.6E-02	--	--	4.4E-01	1.1E-01	--	--	--	--	--	--	--	--	--	--	**4.4E-01**	**1.1E-01**	--	--
Endosulfan Sulfate	0	--	--	na	8.9E+01	--	--	na	1.8E+02	--	--	--	--	--	--	--	--	--	--	na	**1.8E+02**
Endrin	0	8.6E-02	3.6E-02	na	6.0E-02	1.7E-01	7.2E-02	na	1.2E-01	--	--	--	--	--	--	--	--	**1.7E-01**	**7.2E-02**	na	**1.2E-01**
Endrin Aldehyde	0	--	--	na	3.0E-01	--	--	na	6.0E-01	--	--	--	--	--	--	--	--	--	--	na	**6.0E-01**

Parameter	Background	Water Quality Criteria				Wasteload Allocations				Antidegradation Baseline				Antidegradation Allocations				**Most Limiting Allocations**			
(ug/l unless noted)	Conc.	Acute	Chronic	HH (PWS)	HH	Acute	Chronic	HH (PWS)	HH	Acute	Chronic	HH (PWS)	HH	Acute	Chronic	HH (PWS)	HH	**Acute**	**Chronic**	**HH (PWS)**	**HH**
Ethylbenzene	0	--	--	na	2.1E+03	--	--	na	4.2E+03	--	--	--	--	--	--	--	--	--	--	na	**4.2E+03**
Fluoranthene	0	--	--	na	1.4E+02	--	--	na	2.8E+02	--	--	--	--	--	--	--	--	--	--	na	**2.8E+02**
Fluorene	0	--	--	na	5.3E+03	--	--	na	1.1E+04	--	--	--	--	--	--	--	--	--	--	na	**1.1E+04**
Foaming Agents	0	--	--	na	--	--	--	na	--	--	--	--	--	--	--	--	--	--	--	na	--
Guthion	0	--	1.0E-02	na	--	--	2.0E-02	na	--	--	--	--	--	--	--	--	--	--	**2.0E-02**	na	--
Heptachlor [C]	0	5.2E-01	3.8E-03	na	7.9E-04	1.0E+00	7.6E-03	na	1.6E-03	--	--	--	--	--	--	--	--	**1.0E+00**	**7.6E-03**	na	**1.6E-03**
Heptachlor Epoxide [C]	0	5.2E-01	3.8E-03	na	3.9E-04	1.0E+00	7.6E-03	na	7.8E-04	--	--	--	--	--	--	--	--	**1.0E+00**	**7.6E-03**	na	**7.8E-04**
Hexachlorobenzene [C]	0	--	--	na	2.9E-03	--	--	na	5.8E-03	--	--	--	--	--	--	--	--	--	--	na	**5.8E-03**
Hexachlorobutadiene [C]	0	--	--	na	1.8E+02	--	--	na	3.6E+02	--	--	--	--	--	--	--	--	--	--	na	**3.6E+02**
Hexachlorocyclohexane Alpha-BHC [C]	0	--	--	na	4.9E-02	--	--	na	9.8E-02	--	--	--	--	--	--	--	--	--	--	na	**9.8E-02**
Hexachlorocyclohexane Beta-BHC [C]	0	--	--	na	1.7E-01	--	--	na	3.4E-01	--	--	--	--	--	--	--	--	--	--	na	**3.4E-01**
Hexachlorocyclohexane Gamma-BHC [C] (Lindane)	0	9.5E-01	na	na	1.8E+00	1.9E+00	--	na	3.6E+00	--	--	--	--	--	--	--	--	**1.9E+00**	--	na	**3.6E+00**
Hexachlorocyclopentadiene	0	--	--	na	1.1E+03	--	--	na	2.2E+03	--	--	--	--	--	--	--	--	--	--	na	**2.2E+03**
Hexachloroethane [C]	0	--	--	na	3.3E+01	--	--	na	6.6E+01	--	--	--	--	--	--	--	--	--	--	na	**6.6E+01**
Hydrogen Sulfide	0	--	2.0E+00	na	--	--	4.0E+00	na	--	--	--	--	--	--	--	--	--	--	**4.0E+00**	na	--
Indeno (1,2,3-cd) pyrene [C]	0	--	--	na	1.8E-01	--	--	na	3.6E-01	--	--	--	--	--	--	--	--	--	--	na	**3.6E-01**
Iron	0	--	--	na	--	--	--	na	--	--	--	--	--	--	--	--	--	--	--	na	--
Isophorone [C]	0	--	--	na	9.6E+03	--	--	na	1.9E+04	--	--	--	--	--	--	--	--	--	--	na	**1.9E+04**
Kepone	0	--	0.0E+00	na	--	--	0.0E+00	na	--	--	--	--	--	--	--	--	--	--	**0.0E+00**	na	--
Lead	0	1.6E+02	1.8E+01	na	--	3.2E+02	3.7E+01	na	--	--	--	--	--	--	--	--	--	**3.2E+02**	**3.7E+01**	na	--
Malathion	0	--	1.0E-01	na	--	--	2.0E-01	na	--	--	--	--	--	--	--	--	--	--	**2.0E-01**	na	--
Manganese	0	--	--	na	--	--	--	na	--	--	--	--	--	--	--	--	--	--	--	na	--
Mercury	0	1.4E+00	7.7E-01	--	--	2.8E+00	1.5E+00	--	--	--	--	--	--	--	--	--	--	**2.8E+00**	**1.5E+00**	--	--
Methyl Bromide	0	--	--	na	1.5E+03	--	--	na	3.0E+03	--	--	--	--	--	--	--	--	--	--	na	**3.0E+03**
Methylene Chloride [C]	0	--	--	na	5.9E+03	--	--	na	1.2E+04	--	--	--	--	--	--	--	--	--	--	na	**1.2E+04**
Methoxychlor	0	--	3.0E-02	na	--	--	6.0E-02	na	--	--	--	--	--	--	--	--	--	--	**6.0E-02**	na	--
Mirex	0	--	0.0E+00	na	--	--	0.0E+00	na	--	--	--	--	--	--	--	--	--	--	**0.0E+00**	na	--
Nickel	0	2.2E+02	2.5E+01	na	4.6E+03	4.5E+02	5.0E+01	na	9.2E+03	--	--	--	--	--	--	--	--	**4.5E+02**	**5.0E+01**	na	**9.2E+03**
Nitrate (as N)	0	--	--	na	--	--	--	na	--	--	--	--	--	--	--	--	--	--	--	na	--
Nitrobenzene	0	--	--	na	6.9E+02	--	--	na	1.4E+03	--	--	--	--	--	--	--	--	--	--	na	**1.4E+03**
N-Nitrosodimethylamine [C]	0	--	--	na	3.0E+01	--	--	na	6.0E+01	--	--	--	--	--	--	--	--	--	--	na	**6.0E+01**
N-Nitrosodiphenylamine [C]	0	--	--	na	6.0E+01	--	--	na	1.2E+02	--	--	--	--	--	--	--	--	--	--	na	**1.2E+02**
N-Nitrosodi-n-propylamine [C]	0	--	--	na	5.1E+00	--	--	na	1.0E+01	--	--	--	--	--	--	--	--	--	--	na	**1.0E+01**
Nonylphenol	0	2.8E+01	6.6E+00	--	--	5.6E+01	1.3E+01	na	--	--	--	--	--	--	--	--	--	**5.6E+01**	**1.3E+01**	na	--
Parathion	0	6.5E-02	1.3E-02	na	--	1.3E-01	2.6E-02	na	--	--	--	--	--	--	--	--	--	**1.3E-01**	**2.6E-02**	na	--
PCB Total [C]	0	--	1.4E-02	na	6.4E-04	--	2.8E-02	na	1.3E-03	--	--	--	--	--	--	--	--	--	**2.8E-02**	na	**1.3E-03**
Pentachlorophenol [C]	0	2.5E+00	1.9E+00	na	3.0E+01	5.0E+00	3.8E+00	na	6.0E+01	--	--	--	--	--	--	--	--	**5.0E+00**	**3.8E+00**	na	**6.0E+01**
Phenol	0	--	--	na	8.6E+05	--	--	na	1.7E+06	--	--	--	--	--	--	--	--	--	--	na	**1.7E+06**
Pyrene	0	--	--	na	4.0E+03	--	--	na	8.0E+03	--	--	--	--	--	--	--	--	--	--	na	**8.0E+03**
Radionuclides	0	--	--	na	--	--	--	na	--	--	--	--	--	--	--	--	--	--	--	na	--
Gross Alpha Activity (pCi/L)	0	--	--	na	--	--	--	na	--	--	--	--	--	--	--	--	--	--	--	na	--
Beta and Photon Activity (mrem/yr)	0	--	--	na	4.0E+00	--	--	na	8.0E+00	--	--	--	--	--	--	--	--	--	--	na	**8.0E+00**
Radium 226 + 228 (pCi/L)	0	--	--	na	--	--	--	na	--	--	--	--	--	--	--	--	--	--	--	na	--
Uranium (ug/l)	0	--	--	na	--	--	--	na	--	--	--	--	--	--	--	--	--	--	--	na	--

Parameter	Background	Water Quality Criteria				Wasteload Allocations				Antidegradation Baseline				Antidegradation Allocations				**Most Limiting Allocations**			
(ug/l unless noted)	Conc.	Acute	Chronic	HH (PWS)	HH	Acute	Chronic	HH (PWS)	HH	Acute	Chronic	HH (PWS)	HH	Acute	Chronic	HH (PWS)	HH	**Acute**	**Chronic**	**HH (PWS)**	**HH**
Selenium, Total Recoverable	0	2.0E+01	5.0E+00	na	4.2E+03	4.0E+01	1.0E+01	na	8.4E+03	--	--	--	--	--	--	--	--	**4.0E+01**	**1.0E+01**	**na**	**8.4E+03**
Silver	0	5.2E+00	--	na	--	1.0E+01	--	na	--	--	--	--	--	--	--	--	--	**1.0E+01**	**--**	**na**	**--**
Sulfate	0	--	--	na	--	--	--	na	--	--	--	--	--	--	--	--	--	**--**	**--**	**na**	**--**
1,1,2,2-Tetrachloroethane[C]	0	--	--	na	4.0E+01	--	--	na	8.0E+01	--	--	--	--	--	--	--	--	**--**	**--**	**na**	**8.0E+01**
Tetrachloroethylene[C]	0	--	--	na	3.3E+01	--	--	na	6.6E+01	--	--	--	--	--	--	--	--	**--**	**--**	**na**	**6.6E+01**
Thallium	0	--	--	na	4.7E-01	--	--	na	9.4E-01	--	--	--	--	--	--	--	--	**--**	**--**	**na**	**9.4E-01**
Toluene	0	--	--	na	6.0E+03	--	--	na	1.2E+04	--	--	--	--	--	--	--	--	**--**	**--**	**na**	**1.2E+04**
Total dissolved solids	0	--	--	na	--	--	--	na	--	--	--	--	--	--	--	--	--	**--**	**--**	**na**	**--**
Toxaphene [C]	0	7.3E-01	2.0E-04	na	2.8E-03	1.5E+00	4.0E-04	na	5.6E-03	--	--	--	--	--	--	--	--	**1.5E+00**	**4.0E-04**	**na**	**5.6E-03**
Tributyltin	0	4.6E-01	7.2E-02	na	--	9.2E-01	1.4E-01	na	--	--	--	--	--	--	--	--	--	**9.2E-01**	**1.4E-01**	**na**	**--**
1,2,4-Trichlorobenzene	0	--	--	na	7.0E+01	--	--	na	1.4E+02	--	--	--	--	--	--	--	--	**--**	**--**	**na**	**1.4E+02**
1,1,2-Trichloroethane[C]	0	--	--	na	1.6E+02	--	--	na	3.2E+02	--	--	--	--	--	--	--	--	**--**	**--**	**na**	**3.2E+02**
Trichloroethylene [C]	0	--	--	na	3.0E+02	--	--	na	6.0E+02	--	--	--	--	--	--	--	--	**--**	**--**	**na**	**6.0E+02**
2,4,6-Trichlorophenol [C]	0	--	--	na	2.4E+01	--	--	na	4.8E+01	--	--	--	--	--	--	--	--	**--**	**--**	**na**	**4.8E+01**
2-(2,4,5-Trichlorophenoxy) propionic acid (Silvex)	0	--	--	na	--	--	--	na	--	--	--	--	--	--	--	--	--	**--**	**--**	**na**	**--**
Vinyl Chloride[C]	0	--	--	na	2.4E+01	--	--	na	4.8E+01	--	--	--	--	--	--	--	--	**--**	**--**	**na**	**4.8E+01**
Zinc	0	1.4E+02	1.5E+02	na	2.6E+04	2.9E+02	2.9E+02	na	5.2E+04	--	--	--	--	--	--	--	--	**2.9E+02**	**2.9E+02**	**na**	**5.2E+04**

Notes:

1. All concentrations expressed as micrograms/liter (ug/l), unless noted otherwise
2. Discharge flow is highest monthly average or Form 2C maximum for Industries and design flow for Municipals
3. Metals measured as Dissolved, unless specified otherwise
4. "C" indicates a carcinogenic parameter
5. Regular WLAs are mass balances (minus background concentration) using the % of stream flow entered above under Mixing Information.
   Antidegradation WLAs are based upon a complete mix.
6. Antideg. Baseline = (0.25(WQC - background conc.) + background conc.) for acute and chronic
   = (0.1(WQC - background conc.) + background conc.) for human health
7. WLAs established at the following stream flows: 1Q10 for Acute, 30Q10 for Chronic Ammonia, 7Q10 for Other Chronic, 30Q5 for Non-carcinogens and Harmonic Mean for Carcinogens. To apply mixing ratios from a model set the stream flow equal to (mixing ratio - 1), effluent flow equal to 1 and 100% mix.

Metal	Target Value (SSTV)
Antimony	1.3E+03
Arsenic	1.8E+02
Barium	na
Cadmium	1.6E+00
Chromium III	1.1E+02
Chromium VI	1.3E+01
Copper	1.3E+01
Iron	na
Lead	2.2E+01
Manganese	na
Mercury	9.2E-01
Nickel	3.0E+01
Selenium	6.0E+00
Silver	4.2E+00
Zinc	1.2E+02

Note: do not use QL's lower than the minimum QL's provided in agency guidance

FRESHWATER
WATER QUALITY CRITERIA / WASTELOAD ALLOCATION ANALYSIS

Facility Name: City of Alexandria CSS - Outfall 004 Permit No.: VA0087068

Receiving Stream: Hooffs Run Version: OWP Guidance Memo 00-2011 (8/24/00)

Stream Information

Mean Hardness (as CaCO3) =	106	mg/L
90% Temperature (Annual) =	29	deg C
90% Temperature (Wet season) =	20	deg C
90% Maximum pH =	7.1	SU
10% Maximum pH =	5.6	SU
Tier Designation (1 or 2) =	1	
Public Water Supply (PWS) Y/N? =	n	
Trout Present Y/N? =	n	
Early Life Stages Present Y/N? =	y	

Stream Flows

1Q10 (Annual) =	1	MGD
7Q10 (Annual) =	1	MGD
30Q10 (Annual) =	1	MGD
1Q10 (Wet season) =	1	MGD
30Q10 (Wet season)	1	MGD
30Q5 =	1	MGD
Harmonic Mean =	1	MGD

Mixing Information

Annual - 1Q10 Mix =	100	%
- 7Q10 Mix =	100	%
- 30Q10 Mix =	100	%
Wet Season - 1Q10 Mix =	100	%
- 30Q10 Mix =	100	%

Effluent Information

Mean Hardness (as CaCO3) =	152	mg/L
90% Temp (Annual) =	29.1	deg C
90% Temp (Wet season) =	15	deg C
90% Maximum pH =	7.3	SU
10% Maximum pH =	6.3	SU
Discharge Flow =	1	MGD

Parameter	Background	Water Quality Criteria				Wasteload Allocations				Antidegradation Baseline				Antidegradation Allocations				Most Limiting Allocations			
(ug/l unless noted)	Conc.	Acute	Chronic	HH (PWS)	HH	Acute	Chronic	HH (PWS)	HH	Acute	Chronic	HH (PWS)	HH	Acute	Chronic	HH (PWS)	HH	Acute	Chronic	HH (PWS)	HH
Acenapthene	0	--	--	na	9.9E+02	--	--	na	2.0E+03	--	--	--	--	--	--	--	--	--	--	na	2.0E+03
Acrolein	0	--	--	na	9.3E+00	--	--	na	1.9E+01	--	--	--	--	--	--	--	--	--	--	na	1.9E+01
Acrylonitrile [C]	0	--	--	na	2.5E+00	--	--	na	5.0E+00	--	--	--	--	--	--	--	--	--	--	na	5.0E+00
Aldrin [C]	0	3.0E+00	--	na	5.0E-04	6.0E+00	--	na	1.0E-03	--	--	--	--	--	--	--	--	6.0E+00	--	na	1.0E-03
Ammonia-N (mg/l) (Yearly)	0	2.99E+01	2.12E+00	na	--	6.0E+01	4.2E+00	na	--	--	--	--	--	--	--	--	--	6.0E+01	4.2E+00	na	--
Ammonia-N (mg/l) (High Flow)	0	2.99E+01	4.47E+00	na	--	6.0E+01	8.9E+00	na	--	--	--	--	--	--	--	--	--	6.0E+01	8.9E+00	na	--
Anthracene	0	--	--	na	4.0E+04	--	--	na	8.0E+04	--	--	--	--	--	--	--	--	--	--	na	8.0E+04
Antimony	0	--	--	na	6.4E+02	--	--	na	1.3E+03	--	--	--	--	--	--	--	--	--	--	na	1.3E+03
Arsenic	0	3.4E+02	1.5E+02	na	--	6.8E+02	3.0E+02	na	--	--	--	--	--	--	--	--	--	6.8E+02	3.0E+02	na	--
Barium	0	--	--	na	--	--	--	na	--	--	--	--	--	--	--	--	--	--	--	na	--
Benzene [C]	0	--	--	na	5.1E+02	--	--	na	1.0E+03	--	--	--	--	--	--	--	--	--	--	na	1.0E+03
Benzidine [C]	0	--	--	na	2.0E-03	--	--	na	4.0E-03	--	--	--	--	--	--	--	--	--	--	na	4.0E-03
Benzo (a) anthracene [C]	0	--	--	na	1.8E-01	--	--	na	3.6E-01	--	--	--	--	--	--	--	--	--	--	na	3.6E-01
Benzo (b) fluoranthene [C]	0	--	--	na	1.8E-01	--	--	na	3.6E-01	--	--	--	--	--	--	--	--	--	--	na	3.6E-01
Benzo (k) fluoranthene [C]	0	--	--	na	1.8E-01	--	--	na	3.6E-01	--	--	--	--	--	--	--	--	--	--	na	3.6E-01
Benzo (a) pyrene [C]	0	--	--	na	1.8E-01	--	--	na	3.6E-01	--	--	--	--	--	--	--	--	--	--	na	3.6E-01
Bis2-Chloroethyl Ether [C]	0	--	--	na	5.3E+00	--	--	na	1.1E+01	--	--	--	--	--	--	--	--	--	--	na	1.1E+01
Bis2-Chloroisopropyl Ether	0	--	--	na	6.5E+04	--	--	na	1.3E+05	--	--	--	--	--	--	--	--	--	--	na	1.3E+05
Bis 2-Ethylhexyl Phthalate [C]	0	--	--	na	2.2E+01	--	--	na	4.4E+01	--	--	--	--	--	--	--	--	--	--	na	4.4E+01
Bromoform [C]	0	--	--	na	1.4E+03	--	--	na	2.8E+03	--	--	--	--	--	--	--	--	--	--	na	2.8E+03
Butylbenzylphthalate	0	--	--	na	1.9E+03	--	--	na	3.8E+03	--	--	--	--	--	--	--	--	--	--	na	3.8E+03
Cadmium	0	5.2E+00	1.4E+00	na	--	1.0E+01	2.8E+00	na	--	--	--	--	--	--	--	--	--	1.0E+01	2.8E+00	na	--
Carbon Tetrachloride [C]	0	--	--	na	1.6E+01	--	--	na	3.2E+01	--	--	--	--	--	--	--	--	--	--	na	3.2E+01
Chlordane [C]	0	2.4E+00	4.3E-03	na	8.1E-03	4.8E+00	8.6E-03	na	1.6E-02	--	--	--	--	--	--	--	--	4.8E+00	8.6E-03	na	1.6E-02
Chloride	0	8.6E+05	2.3E+05	na	--	1.7E+06	4.6E+05	na	--	--	--	--	--	--	--	--	--	1.7E+06	4.6E+05	na	--
TRC	0	1.9E+01	1.1E+01	na	--	3.8E+01	2.2E+01	na	--	--	--	--	--	--	--	--	--	3.8E+01	2.2E+01	na	--
Chlorobenzene	0	--	--	na	1.6E+03	--	--	na	3.2E+03	--	--	--	--	--	--	--	--	--	--	na	3.2E+03

Parameter	Background	Water Quality Criteria				Wasteload Allocations				Antidegradation Baseline				Antidegradation Allocations				Most Limiting Allocations			
(ug/l unless noted)	Conc.	Acute	Chronic	HH (PWS)	HH	Acute	Chronic	HH (PWS)	HH	Acute	Chronic	HH (PWS)	HH	Acute	Chronic	HH (PWS)	HH	**Acute**	**Chronic**	**HH (PWS)**	**HH**
Chlorodibromomethane[C]	0	--	--	na	1.3E+02	--	--	na	2.6E+02	--	--	--	--	--	--	--	--	--	--	na	**2.6E+02**
Chloroform	0	--	--	na	1.1E+04	--	--	na	2.2E+04	--	--	--	--	--	--	--	--	--	--	na	**2.2E+04**
2-Chloronaphthalene	0	--	--	na	1.6E+03	--	--	na	3.2E+03	--	--	--	--	--	--	--	--	--	--	na	**3.2E+03**
2-Chlorophenol	0	--	--	na	1.5E+02	--	--	na	3.0E+02	--	--	--	--	--	--	--	--	--	--	na	**3.0E+02**
Chlorpyrifos	0	8.3E-02	4.1E-02	na	--	1.7E-01	8.2E-02	na	--	--	--	--	--	--	--	--	--	**1.7E-01**	**8.2E-02**	na	--
Chromium III	0	7.0E+02	9.1E+01	na	--	1.4E+03	1.8E+02	na	--	--	--	--	--	--	--	--	--	**1.4E+03**	**1.8E+02**	na	--
Chromium VI	0	1.6E+01	1.1E+01	na	--	3.2E+01	2.2E+01	na	--	--	--	--	--	--	--	--	--	**3.2E+01**	**2.2E+01**	na	--
Chromium, Total	0	--	--	1.0E+02	--	--	--	na	--	--	--	--	--	--	--	--	--	--	--	na	--
Chrysene [C]	0	--	--	na	1.8E-02	--	--	na	3.6E-02	--	--	--	--	--	--	--	--	--	--	na	**3.6E-02**
Copper	0	1.7E+01	1.1E+01	na	--	3.4E+01	2.2E+01	na	--	--	--	--	--	--	--	--	--	**3.4E+01**	**2.2E+01**	na	--
Cyanide, Free	0	2.2E+01	5.2E+00	na	1.6E+04	4.4E+01	1.0E+01	na	3.2E+04	--	--	--	--	--	--	--	--	**4.4E+01**	**1.0E+01**	na	**3.2E+04**
DDD [C]	0	--	--	na	3.1E-03	--	--	na	6.2E-03	--	--	--	--	--	--	--	--	--	--	na	**6.2E-03**
DDE [C]	0	--	--	na	2.2E-03	--	--	na	4.4E-03	--	--	--	--	--	--	--	--	--	--	na	**4.4E-03**
DDT [C]	0	1.1E+00	1.0E-03	na	2.2E-03	2.2E+00	2.0E-03	na	4.4E-03	--	--	--	--	--	--	--	--	**2.2E+00**	**2.0E-03**	na	**4.4E-03**
Demeton	0	--	1.0E-01	na	--	--	2.0E-01	na	--	--	--	--	--	--	--	--	--	--	**2.0E-01**	na	--
Diazinon	0	1.7E-01	1.7E-01	na	--	3.4E-01	3.4E-01	na	--	--	--	--	--	--	--	--	--	**3.4E-01**	**3.4E-01**	na	--
Dibenz(a,h)anthracene [C]	0	--	--	na	1.8E-01	--	--	na	3.6E-01	--	--	--	--	--	--	--	--	--	--	na	**3.6E-01**
1,2-Dichlorobenzene	0	--	--	na	1.3E+03	--	--	na	2.6E+03	--	--	--	--	--	--	--	--	--	--	na	**2.6E+03**
1,3-Dichlorobenzene	0	--	--	na	9.6E+02	--	--	na	1.9E+03	--	--	--	--	--	--	--	--	--	--	na	**1.9E+03**
1,4-Dichlorobenzene	0	--	--	na	1.9E+02	--	--	na	3.8E+02	--	--	--	--	--	--	--	--	--	--	na	**3.8E+02**
3,3-Dichlorobenzidine[C]	0	--	--	na	2.8E-01	--	--	na	5.6E-01	--	--	--	--	--	--	--	--	--	--	na	**5.6E-01**
Dichlorobromomethane [C]	0	--	--	na	1.7E+02	--	--	na	3.4E+02	--	--	--	--	--	--	--	--	--	--	na	**3.4E+02**
1,2-Dichloroethane [C]	0	--	--	na	3.7E+02	--	--	na	7.4E+02	--	--	--	--	--	--	--	--	--	--	na	**7.4E+02**
1,1-Dichloroethylene	0	--	--	na	7.1E+03	--	--	na	1.4E+04	--	--	--	--	--	--	--	--	--	--	na	**1.4E+04**
1,2-trans-dichloroethylene	0	--	--	na	1.0E+04	--	--	na	2.0E+04	--	--	--	--	--	--	--	--	--	--	na	**2.0E+04**
2,4-Dichlorophenol	0	--	--	na	2.9E+02	--	--	na	5.8E+02	--	--	--	--	--	--	--	--	--	--	na	**5.8E+02**
2,4-Dichlorophenoxy acetic acid (2.4-D)	0	--	--	na	--	--	--	na	--	--	--	--	--	--	--	--	--	--	--	na	--
1,2-Dichloropropane[C]	0	--	--	na	1.5E+02	--	--	na	3.0E+02	--	--	--	--	--	--	--	--	--	--	na	**3.0E+02**
1,3-Dichloropropene [C]	0	--	--	na	2.1E+02	--	--	na	4.2E+02	--	--	--	--	--	--	--	--	--	--	na	**4.2E+02**
Dieldrin [C]	0	2.4E-01	5.6E-02	na	5.4E-04	4.8E-01	1.1E-01	na	1.1E-03	--	--	--	--	--	--	--	--	**4.8E-01**	**1.1E-01**	na	**1.1E-03**
Diethyl Phthalate	0	--	--	na	4.4E+04	--	--	na	8.8E+04	--	--	--	--	--	--	--	--	--	--	na	**8.8E+04**
2,4-Dimethylphenol	0	--	--	na	8.5E+02	--	--	na	1.7E+03	--	--	--	--	--	--	--	--	--	--	na	**1.7E+03**
Dimethyl Phthalate	0	--	--	na	1.1E+06	--	--	na	2.2E+06	--	--	--	--	--	--	--	--	--	--	na	**2.2E+06**
Di-n-Butyl Phthalate	0	--	--	na	4.5E+03	--	--	na	9.0E+03	--	--	--	--	--	--	--	--	--	--	na	**9.0E+03**
2,4 Dinitrophenol	0	--	--	na	5.3E+03	--	--	na	1.1E+04	--	--	--	--	--	--	--	--	--	--	na	**1.1E+04**
2-Methyl-4,6-Dinitrophenol	0	--	--	na	2.8E+02	--	--	na	5.6E+02	--	--	--	--	--	--	--	--	--	--	na	**5.6E+02**
2,4-Dinitrotoluene [C]	0	--	--	na	3.4E+01	--	--	na	6.8E+01	--	--	--	--	--	--	--	--	--	--	na	**6.8E+01**
Dioxin 2,3,7,8-tetrachlorodibenzo-p-dioxin	0	--	--	na	5.1E-08	--	--	na	1.0E-07	--	--	--	--	--	--	--	--	--	--	na	**1.0E-07**
1,2-Diphenylhydrazine[C]	0	--	--	na	2.0E+00	--	--	na	4.0E+00	--	--	--	--	--	--	--	--	--	--	na	**4.0E+00**
Alpha-Endosulfan	0	2.2E-01	5.6E-02	na	8.9E+01	4.4E-01	1.1E-01	na	1.8E+02	--	--	--	--	--	--	--	--	**4.4E-01**	**1.1E-01**	na	**1.8E+02**
Beta-Endosulfan	0	2.2E-01	5.6E-02	na	8.9E+01	4.4E-01	1.1E-01	na	1.8E+02	--	--	--	--	--	--	--	--	**4.4E-01**	**1.1E-01**	na	**1.8E+02**
Alpha + Beta Endosulfan	0	2.2E-01	5.6E-02	--	--	4.4E-01	1.1E-01	--	--	--	--	--	--	--	--	--	--	**4.4E-01**	**1.1E-01**	--	--
Endosulfan Sulfate	0	--	--	na	8.9E+01	--	--	na	1.8E+02	--	--	--	--	--	--	--	--	--	--	na	**1.8E+02**
Endrin	0	8.6E-02	3.6E-02	na	6.0E-02	1.7E-01	7.2E-02	na	1.2E-01	--	--	--	--	--	--	--	--	**1.7E-01**	**7.2E-02**	na	**1.2E-01**
Endrin Aldehyde	0	--	--	na	3.0E-01	--	--	na	6.0E-01	--	--	--	--	--	--	--	--	--	--	na	**6.0E-01**

Parameter	Background	Water Quality Criteria				Wasteload Allocations				Antidegradation Baseline				Antidegradation Allocations				**Most Limiting Allocations**			
(ug/l unless noted)	Conc.	Acute	Chronic	HH (PWS)	HH	Acute	Chronic	HH (PWS)	HH	Acute	Chronic	HH (PWS)	HH	Acute	Chronic	HH (PWS)	HH	**Acute**	**Chronic**	**HH (PWS)**	**HH**
Ethylbenzene	0	--	--	na	2.1E+03	--	--	na	4.2E+03	--	--	--	--	--	--	--	--	--	--	na	**4.2E+03**
Fluoranthene	0	--	--	na	1.4E+02	--	--	na	2.8E+02	--	--	--	--	--	--	--	--	--	--	na	**2.8E+02**
Fluorene	0	--	--	na	5.3E+03	--	--	na	1.1E+04	--	--	--	--	--	--	--	--	--	--	na	**1.1E+04**
Foaming Agents	0	--	--	na	--	--	--	na	--	--	--	--	--	--	--	--	--	--	--	na	**--**
Guthion	0	--	1.0E-02	na	--	--	2.0E-02	na	--	--	--	--	--	--	--	--	--	--	**2.0E-02**	na	**--**
Heptachlor [c]	0	5.2E-01	3.8E-03	na	7.9E-04	1.0E+00	7.6E-03	na	1.6E-03	--	--	--	--	--	--	--	--	**1.0E+00**	**7.6E-03**	na	**1.6E-03**
Heptachlor Epoxide[c]	0	5.2E-01	3.8E-03	na	3.9E-04	1.0E+00	7.6E-03	na	7.8E-04	--	--	--	--	--	--	--	--	**1.0E+00**	**7.6E-03**	na	**7.8E-04**
Hexachlorobenzene[c]	0	--	--	na	2.9E-03	--	--	na	5.8E-03	--	--	--	--	--	--	--	--	--	--	na	**5.8E-03**
Hexachlorobutadiene[c]	0	--	--	na	1.8E+02	--	--	na	3.6E+02	--	--	--	--	--	--	--	--	--	--	na	**3.6E+02**
Hexachlorocyclohexane Alpha-BHC[c]	0	--	--	na	4.9E-02	--	--	na	9.8E-02	--	--	--	--	--	--	--	--	--	--	na	**9.8E-02**
Hexachlorocyclohexane Beta-BHC[c]	0	--	--	na	1.7E-01	--	--	na	3.4E-01	--	--	--	--	--	--	--	--	--	--	na	**3.4E-01**
Hexachlorocyclohexane Gamma-BHC[c] (Lindane)	0	9.5E-01	na	na	1.8E+00	1.9E+00	--	na	3.6E+00	--	--	--	--	--	--	--	--	**1.9E+00**	--	na	**3.6E+00**
Hexachlorocyclopentadiene	0	--	--	na	1.1E+03	--	--	na	2.2E+03	--	--	--	--	--	--	--	--	--	--	na	**2.2E+03**
Hexachloroethane[c]	0	--	--	na	3.3E+01	--	--	na	6.6E+01	--	--	--	--	--	--	--	--	--	--	na	**6.6E+01**
Hydrogen Sulfide	0	--	2.0E+00	na	--	--	4.0E+00	na	--	--	--	--	--	--	--	--	--	--	**4.0E+00**	na	**--**
Indeno (1,2,3-cd) pyrene [c]	0	--	--	na	1.8E-01	--	--	na	3.6E-01	--	--	--	--	--	--	--	--	--	--	na	**3.6E-01**
Iron	0	--	--	na	--	--	--	na	--	--	--	--	--	--	--	--	--	--	--	na	**--**
Isophorone[c]	0	--	--	na	9.6E+03	--	--	na	1.9E+04	--	--	--	--	--	--	--	--	--	--	na	**1.9E+04**
Kepone	0	--	0.0E+00	na	--	--	0.0E+00	na	--	--	--	--	--	--	--	--	--	--	**0.0E+00**	na	**--**
Lead	0	1.6E+02	1.9E+01	na	--	3.3E+02	3.7E+01	na	--	--	--	--	--	--	--	--	--	**3.3E+02**	**3.7E+01**	na	**--**
Malathion	0	--	1.0E-01	na	--	--	2.0E-01	na	--	--	--	--	--	--	--	--	--	--	**2.0E-01**	na	**--**
Manganese	0	--	--	na	--	--	--	na	--	--	--	--	--	--	--	--	--	--	--	na	**--**
Mercury	0	1.4E+00	7.7E-01	- -	- -	2.8E+00	1.5E+00	- -	- -	--	--	--	--	--	--	--	--	**2.8E+00**	**1.5E+00**	- -	**- -**
Methyl Bromide	0	--	--	na	1.5E+03	--	--	na	3.0E+03	--	--	--	--	--	--	--	--	--	--	na	**3.0E+03**
Methylene Chloride [c]	0	--	--	na	5.9E+03	--	--	na	1.2E+04	--	--	--	--	--	--	--	--	--	--	na	**1.2E+04**
Methoxychlor	0	--	3.0E-02	na	--	--	6.0E-02	na	--	--	--	--	--	--	--	--	--	--	**6.0E-02**	na	**--**
Mirex	0	--	0.0E+00	na	--	--	0.0E+00	na	--	--	--	--	--	--	--	--	--	--	**0.0E+00**	na	**--**
Nickel	0	2.3E+02	2.5E+01	na	4.6E+03	4.5E+02	5.0E+01	na	9.2E+03	--	--	--	--	--	--	--	--	**4.5E+02**	**5.0E+01**	na	**9.2E+03**
Nitrate (as N)	0	--	--	na	--	--	--	na	--	--	--	--	--	--	--	--	--	--	--	na	**--**
Nitrobenzene	0	--	--	na	6.9E+02	--	--	na	1.4E+03	--	--	--	--	--	--	--	--	--	--	na	**1.4E+03**
N-Nitrosodimethylamine[c]	0	--	--	na	3.0E+01	--	--	na	6.0E+01	--	--	--	--	--	--	--	--	--	--	na	**6.0E+01**
N-Nitrosodiphenylamine[c]	0	--	--	na	6.0E+01	--	--	na	1.2E+02	--	--	--	--	--	--	--	--	--	--	na	**1.2E+02**
N-Nitrosodi-n-propylamine[c]	0	--	--	na	5.1E+00	--	--	na	1.0E+01	--	--	--	--	--	--	--	--	--	--	na	**1.0E+01**
Nonylphenol	0	2.8E+01	6.6E+00	--	--	5.6E+01	1.3E+01	na	--	--	--	--	--	--	--	--	--	**5.6E+01**	**1.3E+01**	na	**--**
Parathion	0	6.5E-02	1.3E-02	na	--	1.3E-01	2.6E-02	na	--	--	--	--	--	--	--	--	--	**1.3E-01**	**2.6E-02**	na	**--**
PCB Total[c]	0	--	1.4E-02	na	6.4E-04	--	2.8E-02	na	1.3E-03	--	--	--	--	--	--	--	--	--	**2.8E-02**	na	**1.3E-03**
Pentachlorophenol [c]	0	2.7E+00	2.0E+00	na	3.0E+01	5.3E+00	4.1E+00	na	6.0E+01	--	--	--	--	--	--	--	--	**5.3E+00**	**4.1E+00**	na	**6.0E+01**
Phenol	0	--	--	na	8.6E+05	--	--	na	1.7E+06	--	--	--	--	--	--	--	--	--	--	na	**1.7E+06**
Pyrene	0	--	--	na	4.0E+03	--	--	na	8.0E+03	--	--	--	--	--	--	--	--	--	--	na	**8.0E+03**
Radionuclides	0	--	--	na	--	--	--	na	--	--	--	--	--	--	--	--	--	--	--	na	**--**
Gross Alpha Activity (pCi/L)	0	--	--	na	--	--	--	na	--	--	--	--	--	--	--	--	--	--	--	na	**--**
Beta and Photon Activity (mrem/yr)	0	--	--	na	4.0E+00	--	--	na	8.0E+00	--	--	--	--	--	--	--	--	--	--	na	**8.0E+00**
Radium 226 + 228 (pCi/L)	0	--	--	na	--	--	--	na	--	--	--	--	--	--	--	--	--	--	--	na	**--**
Uranium (ug/l)	0	--	--	na	--	--	--	na	--	--	--	--	--	--	--	--	--	--	--	na	**--**

Parameter	Background	Water Quality Criteria				Wasteload Allocations				Antidegradation Baseline				Antidegradation Allocations				**Most Limiting Allocations**			
(ug/l unless noted)	Conc.	Acute	Chronic	HH (PWS)	HH	Acute	Chronic	HH (PWS)	HH	Acute	Chronic	HH (PWS)	HH	Acute	Chronic	HH (PWS)	HH	**Acute**	**Chronic**	**HH (PWS)**	**HH**
Selenium, Total Recoverable	0	2.0E+01	5.0E+00	na	4.2E+03	4.0E+01	1.0E+01	na	8.4E+03	--	--	--	--	--	--	--	--	**4.0E+01**	**1.0E+01**	**na**	**8.4E+03**
Silver	0	5.3E+00	--	na	--	1.1E+01	--	na	--	--	--	--	--	--	--	--	--	**1.1E+01**	**--**	**na**	**--**
Sulfate	0	--	--	na	--	--	--	na	--	--	--	--	--	--	--	--	--	**--**	**--**	**na**	**--**
1,1,2,2-Tetrachloroethane[C]	0	--	--	na	4.0E+01	--	--	na	8.0E+01	--	--	--	--	--	--	--	--	**--**	**--**	**na**	**8.0E+01**
Tetrachloroethylene[C]	0	--	--	na	3.3E+01	--	--	na	6.6E+01	--	--	--	--	--	--	--	--	**--**	**--**	**na**	**6.6E+01**
Thallium	0	--	--	na	4.7E-01	--	--	na	9.4E-01	--	--	--	--	--	--	--	--	**--**	**--**	**na**	**9.4E-01**
Toluene	0	--	--	na	6.0E+03	--	--	na	1.2E+04	--	--	--	--	--	--	--	--	**--**	**--**	**na**	**1.2E+04**
Total dissolved solids	0	--	--	na	--	--	--	na	--	--	--	--	--	--	--	--	--	**--**	**--**	**na**	**--**
Toxaphene [C]	0	7.3E-01	2.0E-04	na	2.8E-03	1.5E+00	4.0E-04	na	5.6E-03	--	--	--	--	--	--	--	--	**1.5E+00**	**4.0E-04**	**na**	**5.6E-03**
Tributyltin	0	4.6E-01	7.2E-02	na	--	9.2E-01	1.4E-01	na	--	--	--	--	--	--	--	--	--	**9.2E-01**	**1.4E-01**	**na**	**--**
1,2,4-Trichlorobenzene	0	--	--	na	7.0E+01	--	--	na	1.4E+02	--	--	--	--	--	--	--	--	**--**	**--**	**na**	**1.4E+02**
1,1,2-Trichloroethane[C]	0	--	--	na	1.6E+02	--	--	na	3.2E+02	--	--	--	--	--	--	--	--	**--**	**--**	**na**	**3.2E+02**
Trichloroethylene [C]	0	--	--	na	3.0E+02	--	--	na	6.0E+02	--	--	--	--	--	--	--	--	**--**	**--**	**na**	**6.0E+02**
2,4,6-Trichlorophenol [C]	0	--	--	na	2.4E+01	--	--	na	4.8E+01	--	--	--	--	--	--	--	--	**--**	**--**	**na**	**4.8E+01**
2-(2,4,5-Trichlorophenoxy) propionic acid (Silvex)	0	--	--	na	--	--	--	na	--	--	--	--	--	--	--	--	--	**--**	**--**	**na**	**--**
Vinyl Chloride[C]	0	--	--	na	2.4E+01	--	--	na	4.8E+01	--	--	--	--	--	--	--	--	**--**	**--**	**na**	**4.8E+01**
Zinc	0	1.5E+02	1.5E+02	na	2.6E+04	2.9E+02	2.9E+02	na	5.2E+04	--	--	--	--	--	--	--	--	**2.9E+02**	**2.9E+02**	**na**	**5.2E+04**

Notes:

1. All concentrations expressed as micrograms/liter (ug/l), unless noted otherwise
2. Discharge flow is highest monthly average or Form 2C maximum for Industries and design flow for Municipals
3. Metals measured as Dissolved, unless specified otherwise
4. "C" indicates a carcinogenic parameter
5. Regular WLAs are mass balances (minus background concentration) using the % of stream flow entered above under Mixing Information.
   Antidegradation WLAs are based upon a complete mix.
6. Antideg. Baseline = (0.25(WQC - background conc.) + background conc.) for acute and chronic
   = (0.1(WQC - background conc.) + background conc.) for human health
7. WLAs established at the following stream flows: 1Q10 for Acute, 30Q10 for Chronic Ammonia, 7Q10 for Other Chronic, 30Q5 for Non-carcinogens and Harmonic Mean for Carcinogens. To apply mixing ratios from a model set the stream flow equal to (mixing ratio - 1), effluent flow equal to 1 and 100% mix.

Metal	Target Value (SSTV)
Antimony	1.3E+03
Arsenic	1.8E+02
Barium	na
Cadmium	1.7E+00
Chromium III	1.1E+02
Chromium VI	1.3E+01
Copper	1.3E+01
Iron	na
Lead	2.2E+01
Manganese	na
Mercury	9.2E-01
Nickel	3.0E+01
Selenium	6.0E+00
Silver	4.3E+00
Zinc	1.2E+02

Note: do not use QL's lower than the minimum QL's provided in agency guidance

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Facility = City of Alexandria CSS - Outfall 001
Chemical = Copper
Chronic averaging period = 4
WLAa = 23
WLAc =
Q.L. = 9.4
# samples/mo. = 1
# samples/wk. = 1

Summary of Statistics:

observations = 15
Expected Value = 13.2398
Variance = 6.10592
C.V. = 0.186634
97th percentile daily values = 18.3681
97th percentile 4 day average = 15.7058
97th percentile 30 day average= 14.0884
< Q.L. = 1
Model used = delta lognormal

No Limit is required for this material

The data are:

12
13
11
15
18
16
14
16
10
14
11
7.4
12
12
15

8/17/2012 2:52:25 PM

Facility = City of Alexandria CSS - Outfall 001
Chemical = Zinc
Chronic averaging period = 4
WLAa = 210
WLAc =
Q.L. = 83
# samples/mo. = 1
# samples/wk. = 1

Summary of Statistics:

observations = 15
Expected Value = 13.2398
Variance = 6.10592
C.V. = 0.186634
97th percentile daily values = 18.3681
97th percentile 4 day average = 15.7058
97th percentile 30 day average= 14.0884
< Q.L. = 15
Model used = delta lognormal

No Limit is required for this material

The data are:

54
55
39
45
30
69
60
61
26
29
72
50
64
61
72

8/17/2012 4:33:28 PM

Facility = City of Alexandria CSS - Outfall 002
Chemical = Copper
Chronic averaging period = 4
WLAa = 20
WLAc =
Q.L. = 8.1
# samples/mo. = 1
# samples/wk. = 1

Summary of Statistics:

observations = 16
Expected Value = 19.8167
Variance = 135.042
C.V. = 0.586410
97th percentile daily values = 48.1376
97th percentile 4 day average = 32.6379
97th percentile 30 day average= 23.8076
< Q.L. = 1
Model used = delta lognormal

A limit is needed based on Acute Toxicity
Maximum Daily Limit = 20
Average Weekly limit = 20
Average Monthly LImit = 20

The data are:

28
30
30
14
15
12
11
11
9.8
17
17
16
15
17
3.5
73

8/17/2012 4:34:57 PM

Facility = City of Alexandria CSS - Outfall 002
Chemical = Zinc
Chronic averaging period = 4
WLAa = 180
WLAc =
Q.L. = 73
# samples/mo. = 1
# samples/wk. = 1

Summary of Statistics:

observations = 15
Expected Value =
Variance =
C.V. =
97th percentile daily values =
97th percentile 4 day average =
97th percentile 30 day average=
< Q.L. = 15
Model used =

No Limit is required for this material

The data are:

42
41
43
21
42
29
24
31
23
40
35
31
35
49
51

8/17/2012 4:52:20 PM

Facility = City of Alexandria CSS - Outfall 003
Chemical = Copper
Chronic averaging period = 4
WLAa = 34
WLAc =
Q.L. = 13
# samples/mo. = 1
# samples/wk. = 1

Summary of Statistics:

observations = 10
Expected Value = 11.3351
Variance = 46.2545
C.V. = 0.6
97th percentile daily values = 27.5830
97th percentile 4 day average = 18.8592
97th percentile 30 day average= 13.6707
< Q.L. = 7
Model used = BPJ Assumptions, Type 1 data

No Limit is required for this material

The data are:

8
9
6
10
15
12
8
9
19
22

8/17/2012 4:53:36 PM

Facility = City of Alexandria CSS - Outfall 003
Chemical = Zinc
Chronic averaging period = 4
WLAa = 290
WLAc =
Q.L. = 120
# samples/mo. = 1
# samples/wk. = 1

Summary of Statistics:

observations = 10
Expected Value =
Variance =
C.V. =
97th percentile daily values =
97th percentile 4 day average =
97th percentile 30 day average=
< Q.L. = 10
Model used =

No Limit is required for this material

The data are:

50
20
30
30
90
60
50
50
70
80

8/17/2012 4:56:56 PM

Facility = City of Alexandria CSS - Outfall 004
Chemical = Copper
Chronic averaging period = 4
WLAa = 34
WLAc =
Q.L. = 13
# samples/mo. = 1
# samples/wk. = 1

Summary of Statistics:

observations = 12
Expected Value = 8.93141
Variance = 28.7172
C.V. = 0.6
97th percentile daily values = 21.7338
97th percentile 4 day average = 14.8600
97th percentile 30 day average= 10.7717
< Q.L. = 10
Model used = BPJ Assumptions, Type 1 data

No Limit is required for this material

The data are:

6
6
5
7
8
13
12
6
9
7
18
5

8/17/2012 4:57:59 PM

Facility = City of Alexandria CSS - Outfall 004
Chemical = Zinc
Chronic averaging period = 4
WLAa = 290
WLAc =
Q.L. = 120
# samples/mo. = 1
# samples/wk. = 1

Summary of Statistics:

observations = 12
Expected Value = 66.5286
Variance = 1593.38
C.V. = 0.6
97th percentile daily values = 161.891
97th percentile 4 day average = 110.689
97th percentile 30 day average= 80.2370
< Q.L. = 11
Model used = BPJ Assumptions, Type 1 data

No Limit is required for this material

The data are:

10
10
200
50
50
50
40
50
40
70
40
20

Public Notice – Environmental Permit

PURPOSE OF NOTICE: To seek public comment on a draft permit from the Department of Environmental Quality that will allow the release of overflows from a combined sewer system during wet weather events into three water bodies in Alexandria, Virginia.

PUBLIC COMMENT PERIOD: TBD, 2012 to 5:00 p.m. on TBD, 2013

PERMIT NAME: Virginia Pollutant Discharge Elimination System Permit – issued by DEQ, under the authority of the State Water Control Board.

APPLICANT NAME, ADDRESS AND PERMIT NUMBER: City of Alexandria
301 King Street, Room 4100, Alexandria, VA 22313
VA0087068

NAME AND ADDRESS OF FACILITY: Alexandria Combined Sewer System
Alexandria, VA 22313

PROJECT DESCRIPTION: The City of Alexandria has applied for reissuance of a permit for the public Alexandria Combined Sewer System. The applicant proposes to release combined sewer system overflows during wet weather events at an estimated annual volume of 112.8 million gallons into three water bodies. There is no sludge generated by this system. The facility proposes to release combined sewer system overflows during wet weather events in the Hooffs Run, Hunting Creek and Oronoco Bay in Alexandria in the Potomac River watershed. A watershed is the land area drained by a river and its incoming streams. The permit requires monitoring of the following pollutants: pH, carbonaceous-Biochemical Oxygen Demand, Total Suspended Solids, Dissolved Oxygen, Total Kjeldahl Nitrogen, Ammonia, E. coli, Nitrate+Nitrite, Total Nitrogen, Total Phosphorus, Chlorides, Total Recoverable Zinc, and Total Recoverable Copper.

HOW TO COMMENT AND/OR REQUEST A PUBLIC HEARING: DEQ accepts comments and requests for public hearing by email, fax or postal mail. All comments and requests must be in writing and be received by DEQ during the comment period. Submittals must include the names, mailing addresses and telephone numbers of the commenter/requester and of all persons represented by the commenter/requester. A request for public hearing must also include: 1) The reason why a public hearing is requested. 2) A brief, informal statement regarding the nature and extent of the interest of the requester or of those represented by the requester, including how and to what extent such interest would be directly and adversely affected by the permit. 3) Specific references, where possible, to terms and conditions of the permit with suggested revisions. A public hearing may be held, including another comment period, if public response is significant, based on individual requests for a public hearing, and there are substantial, disputed issues relevant to the permit.

CONTACT FOR PUBLIC COMMENTS, DOCUMENT REQUESTS AND ADDITIONAL INFORMATION: The public may review the documents at the DEQ-Northern Regional Office by appointment or may request electronic copies of the draft permit and fact sheet.

Name: Douglas Frasier
Address: DEQ-Northern Regional Office, 13901 Crown Court, Woodbridge, VA 22193
Phone: (703) 583-3873 Email: Douglas.Frasier@deq.virginia.gov Fax: (703) 583-3821

Revised 2/2003

State "Transmittal Checklist" to Assist in Targeting
Municipal and Industrial Individual NPDES Draft Permits for Review

Part I. State Draft Permit Submission Checklist

In accordance with the MOA established between the Commonwealth of Virginia and the United States Environmental Protection Agency, Region III, the Commonwealth submits the following draft National Pollutant Discharge Elimination System (NPDES) permit for Agency review and concurrence.

Facility Name:	Alexandria Combined Sewer System
NPDES Permit Number:	VA0087068
Permit Writer Name:	Douglas Frasier
Date:	30 August 2012

Major [X] **Minor** [ ] **Industrial** [ ] **Municipal** [X]

I.A. Draft Permit Package Submittal Includes:	**Yes**	**No**	**N/A**
1. Permit Application?	X		
2. Complete Draft Permit (for renewal or first time permit – entire permit, including boilerplate information)?	X		
3. Copy of Public Notice?	X		
4. Complete Fact Sheet?	X		
5. A Priority Pollutant Screening to determine parameters of concern?		X	
6. A Reasonable Potential analysis showing calculated WQBELs?	X		
7. Dissolved Oxygen calculations?			X
8. Whole Effluent Toxicity Test summary and analysis?		X	
9. Permit Rating Sheet for new or modified industrial facilities?			X

I.B. Permit/Facility Characteristics	**Yes**	**No**	**N/A**
1. Is this a new, or currently unpermitted facility?		X	
2. Are all permissible outfalls (including combined sewer overflow points, non-process water and storm water) from the facility properly identified and authorized in the permit?	X		
3. Does the fact sheet **or** permit contain a description of the wastewater treatment process?			X
4. Does the review of PCS/DMR data for at least the last 3 years indicate significant non-compliance with the existing permit?			X
5. Has there been any change in streamflow characteristics since the last permit was developed?		X	
6. Does the permit allow the discharge of new or increased loadings of any pollutants?		X	
7. Does the fact sheet **or** permit provide a description of the receiving water body(s) to which the facility discharges, including information on low/critical flow conditions and designated/existing uses?	X		
8. Does the facility discharge to a 303(d) listed water?	X		
a. Has a TMDL been developed and approved by EPA for the impaired water?	X		
b. Does the record indicate that the TMDL development is on the State priority list and will most likely be developed within the life of the permit?			X
c. Does the facility discharge a pollutant of concern identified in the TMDL or 303(d) listed water?	X		
9. Have any limits been removed, or are any limits less stringent, than those in the current permit?			X
10. Does the permit authorize discharges of storm water?			X

I.B. Permit/Facility Characteristics – cont.	Yes	No	N/A
11. Has the facility substantially enlarged or altered its operation or substantially increased its flow or production?		X	
12. Are there any production-based, technology-based effluent limits in the permit?			X
13. Do any water quality-based effluent limit calculations differ from the State's standard policies or procedures?			X
14. Are any WQBELs based on an interpretation of narrative criteria?			X
15. Does the permit incorporate any variances or other exceptions to the State's standards or regulations?		X	
16. Does the permit contain a compliance schedule for any limit or condition?		X	
17. Is there a potential impact to endangered/threatened species or their habitat by the facility's discharge(s)?	X		
18. Have impacts from the discharge(s) at downstream potable water supplies been evaluated?	X		
19. Is there any indication that there is significant public interest in the permit action proposed for this facility?		X	
20. Have previous permit, application, and fact sheet been examined?	X		

Part II. NPDES Draft Permit Checklist

Region III NPDES Permit Quality Checklist – for POTWs
(To be completed and included in the record only for POTWs)

II.A. Permit Cover Page/Administration	Yes	No	N/A
1. Does the fact sheet or permit describe the physical location of the facility, including latitude and longitude (not necessarily on permit cover page)?	X		
2. Does the permit contain specific authorization-to-discharge information (from where to where, by whom)?	X		

II.B. Effluent Limits – General Elements	Yes	No	N/A
1. Does the fact sheet describe the basis of final limits in the permit (e.g., that a comparison of technology and water quality-based limits was performed, and the most stringent limit selected)?	NOT APPLICABLE		
2. Does the fact sheet discuss whether "antibacksliding" provisions were met for any limits that are less stringent than those in the previous NPDES permit?			X

II.C. Technology-Based Effluent Limits (POTWs)	Yes	No	N/A
1. Does the permit contain numeric limits for ALL of the following: BOD (or alternative, e.g., CBOD, COD, TOC), TSS, and pH?	NOT APPLICABLE		
2. Does the permit require at least 85% removal for BOD (or BOD alternative) and TSS (or 65% for equivalent to secondary) consistent with 40 CFR Part 133?			
a. If no, does the record indicate that application of WQBELs, or some other means, results in more stringent requirements than 85% removal or that an exception consistent with 40 CFR 133.103 has been approved?			
3. Are technology-based permit limits expressed in the appropriate units of measure (e.g., concentration, mass, SU)?			
4. Are permit limits for BOD and TSS expressed in terms of both long term (e.g., average monthly) and short term (e.g., average weekly) limits?			
5. Are any concentration limitations in the permit less stringent than the secondary treatment requirements (30 mg/l BOD5 and TSS for a 30-day average and 45 mg/l BOD5 and TSS for a 7-day average)?			
a. If yes, does the record provide a justification (e.g., waste stabilization pond, trickling filter, etc.) for the alternate limitations?			

II.D. Water Quality-Based Effluent Limits	Yes	No	N/A
1. Does the permit include appropriate limitations consistent with 40 CFR 122.44(d) covering State narrative and numeric criteria for water quality?			X
2. Does the fact sheet indicate that any WQBELs were derived from a completed and EPA approved TMDL?			X
3. Does the fact sheet provide effluent characteristics for each outfall?	X		
4. Does the fact sheet document that a "reasonable potential" evaluation was performed?	X		
a. If yes, does the fact sheet indicate that the "reasonable potential" evaluation was performed in accordance with the State's approved procedures?	X		
b. Does the fact sheet describe the basis for allowing or disallowing in-stream dilution or a mixing zone?	X		
c. Does the fact sheet present WLA calculation procedures for all pollutants that were found to have "reasonable potential"?	X		
d. Does the fact sheet indicate that the "reasonable potential" and WLA calculations accounted for contributions from upstream sources (i.e., do calculations include ambient/background concentrations)?			X
e. Does the permit contain numeric effluent limits for all pollutants for which "reasonable potential" was determined?			X

II.D. Water Quality-Based Effluent Limits – cont.	Yes	No	N/A
5. Are all final WQBELs in the permit consistent with the justification and/or documentation provided in the fact sheet?			X
6. For all final WQBELs, are BOTH long-term AND short-term effluent limits established?			X
7. Are WQBELs expressed in the permit using appropriate units of measure (e.g., mass, concentration)?			X
8. Does the record indicate that an "antidegradation" review was performed in accordance with the State's approved antidegradation policy?			X

II.E. Monitoring and Reporting Requirements	Yes	No	N/A
1. Does the permit require at least annual monitoring for all limited parameters and other monitoring as required by State and Federal regulations?	NOT APPLICABLE		
a. If no, does the fact sheet indicate that the facility applied for and was granted a monitoring waiver, AND, does the permit specifically incorporate this waiver?			
2. Does the permit identify the physical location where monitoring is to be performed for each outfall?		X	
3. Does the permit require at least annual influent monitoring for BOD (or BOD alternative) and TSS to assess compliance with applicable percent removal requirements?			X
4. Does the permit require testing for Whole Effluent Toxicity?	X		

II.F. Special Conditions	Yes	No	N/A
1. Does the permit include appropriate biosolids use/disposal requirements?			X
2. Does the permit include appropriate storm water program requirements?			X

II.F. Special Conditions – cont.	Yes	No	N/A
3. If the permit contains compliance schedule(s), are they consistent with statutory and regulatory deadlines and requirements?			X
4. Are other special conditions (e.g., ambient sampling, mixing studies, TIE/TRE, BMPs, special studies) consistent with CWA and NPDES regulations?	X		
5. Does the permit allow/authorize discharge of sanitary sewage from points other than the POTW outfall(s) or CSO outfalls [i.e., Sanitary Sewer Overflows (SSOs) or treatment plant bypasses]?		X	
6. Does the permit authorize discharges from Combined Sewer Overflows (CSOs)?	X		
a. Does the permit require implementation of the "Nine Minimum Controls"?	X		
b. Does the permit require development and implementation of a "Long Term Control Plan"?	X		
c. Does the permit require monitoring and reporting for CSO events?	X		
7. Does the permit include appropriate Pretreatment Program requirements?			X

II.G. Standard Conditions	Yes	No	N/A
1. Does the **permit** contain all 40 CFR 122.41 standard conditions or the State equivalent (or more stringent) conditions?	X		

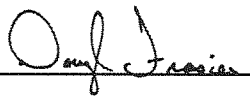
List of Standard Conditions – 40 CFR 122.41

Duty to comply	Property rights	Reporting Requirements
Duty to reapply	Duty to provide information	Planned change
Need to halt or reduce activity not a defense	Inspections and entry	Anticipated noncompliance
	Monitoring and records	Transfers
Duty to mitigate	Signatory requirement	Monitoring reports
Proper O & M	Bypass	Compliance schedules
Permit actions	Upset	24-Hour reporting
		Other non-compliance

2. Does the permit contain the additional standard condition (or the State equivalent or more stringent conditions) for POTWs regarding notification of new introduction of pollutants and new industrial users [40 CFR 122.42(b)]?	X		

Part III. Signature Page

Based on a review of the data and other information submitted by the permit applicant, and the draft permit and other administrative records generated by the Department/Division and/or made available to the Department/Division, the information provided on this checklist is accurate and complete, to the best of my knowledge.

Name	Douglas Frasier
Title	VPDES Permit Writer, Senior II
Signature	
Date	30 August 2012